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# **A SELECTED BIBLIOGRAPHY ON IRRIGATION MANAGEMENT**

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Volume 10

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**INTERNATIONAL IRRIGATION MANAGEMENT INSTITUTE**  
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International Irrigation Management Institute. Library & Documentation Service.  
1986 - . A selected bibliography on irrigation management (Documents entered in the  
Irrigation Management Information Network (IMIN) Database. Volume 10. 1997.  
Colombo, Sri Lanka: IIMI.viii, 284p. + indexes.

*Bibliographies / Irrigation management/ Networks / Data storage and retrieval*

DDC: 016.6317

ISSN: 1015-1680

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# PREFACE

The Bibliography compiled by the IIMI Headquarters Documentation Service is a computer generated listing of citations on irrigation management and related disciplines selected from the Irrigation Management Information Network (IMIN) database.

This annual volume contains citations added to the database during 1996 and supplements the earlier volumes. The bibliography is not exhaustive in its coverage of literature on irrigation management, but many significant writings across a spectrum of disciplines that address irrigation management are included.

Citations are arranged according to broad Dewey Decimal Classification divisions. Aspects of irrigation management have been expanded by IIMI to better distinguish them as otherwise the majority of documents would fall within a few disciplines. Arrangement of entries is by alphabetical order of author and title within each category. Abstracts are included only where feasible.

Specific keyword and geographical terms in addition to the categorical divisions are assigned, thus bringing together citations on more specific topics regardless of the category in which they are located in the main body of the bibliography. Author and title indexes are included facilitating access to the

individual citations. Entries are added to the database as and when documents are acquired by the collaborating institutions and, therefore, old as well as new documents are included in a particular period. All documents cited are housed in the collaborating institutes indicated by the location codes.

Only the bibliographic details will be provided in response to requests for literature searches, and compilation of bibliographies from the IMIN database. To obtain any documents cited, send a request by letter, telephone, fax or e-mail to the IIMI Headquarters Documentation Service. IIMI will provide photocopies of nonrestricted and noncopyright materials available at Headquarters, or help obtain documents through inter-library loan.

In compiling the bibliography I have been assisted by a number of staff members of the Communications and Donor Relations Unit at IIMI Headquarters, and others at our collaborating institutes. I would like to thank them for their support in preparing records for inclusion in the database, and their willingness to follow the strict standards set for this cooperative venture.

**Ramya de Silva**  
*Library & Documentation Service*

10 June, 1997

# GUIDE TO ENTRIES

	Author	Date	
Entry number	18903.	Srivastava, R. C.	1996.
Title	Methodology for optimizing design of integrated tank irrigation system.		
Journal title	Journal of Water Resources Planning and Management,		
Collation	122(6):394-402.		
Keywords	<i>Tank irrigation / Irrigation design / Optimization / Mathematical models</i>		
Location	<i>(Location: HQ Call No: PER Record No: H 19316)</i>		
Abstract	<p><b>Abstract:</b> Tank irrigation has been in existence for centuries. However, optimization of the tank irrigation system is of recent origin. Even this has been attempted in piecemeal, optimizing every segment/aspect of the irrigation system individually. Thus, although each component may be optimal, the system as a whole may not be optimal. This paper presents a methodology to optimize the design of the tank irrigation system by taking into account the constraints, objectives, options of the location, conveyance and application methods, crops and their irrigation levels, productivity, demand of the population dependent upon that area in terms of amount of foodgrains, pulses, oilseeds, nutrients, and the availability of different inputs to achieve an optimal design of all components of the system.</p>		

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## ABBREVIATIONS USED

ACIAR	Australian Council of International Agricultural Research
ADB	Asian Development Bank
AGREN	Agricultural Research & Extension Network (ODI), UK
APAARI	AsiaPacific Association of Agricultural Research Institutes
CEMAGREF	Centre National du Machinisme Agricole, du Genie Rural, des Eaux et des Forets
CGIAR	Consultative Group on International Agricultural Research
CIHEAM	Instituto Agronomico Mediterraneo Valenzano - Bari
CSIRO	Commonwealth Scientific & Industrial Research Organization
DORAS	Development Oriented Research on Agrarian Systems Project
CIAT	Centro Internacional de Agricultura Tropical
CIMMYT	Centro Internacional de Mejoramiento de Maiz y Trigo
DSE	Deutsche Stiftung fur international Entwicklung
ESCAP	Economic and Social Commission for Asia and the Pacific
FAO	Food and Agriculture Organization
GIS	Geographical Information Systems
GOs	Governmental Organizations
GTZ	Deutsche Gesellschaft fur Technische Zusammenarbeit
ICAR	Indian Council of Agricultural Research
ICARDA	International Centre for Agricultural Research in the Dry Areas
ICID	International Commission on Irrigation and Drainage
ICIMOD	International Centre for Integrated Mountain Development
IFPRI	International Food Policy Research Institute
IIED	International Institute for Environment and Development
IIM	Indian Institute of Management
IIMI	International Irrigation Management Institute
IITA -	International Institute of Tropical Agriculture
ILRI	International Institute for Land Reclamation and Improvement
IPTRID	International Program for Technology Research in Irrigation and Drainage
IRMU	Irrigation Research Management Unit, Irrigation Department (Sri Lanka)
IRRI	International Rice Research Institute
ISNAR	International Service for National Agricultural Research
ISO	International Standards Organization
IUCN	The World Conservation Union
IWASRI	International Waterlogging and Salinity Research Institute
NARS	National Agricultural Research Systems
NESPAK	National Engineering Services (Pakistan) Ltd.
NGOs	Non-Governmental Organizations
NIRP	National Irrigation Rehabilitation Project (Sri Lanka)
NRM	Natural Resource Management
ODI	Overseas Development Institute (UK)
ORSTOM	Institut de Recherche Scientifique en Cooperation pour le Développement

RCWP	Rock Creek Rural Clean Water Program, (USA)
REGIWA	Regional Integral Watermanagement Project. (The Netherlands)
SAREC	Swedish Agency for Research Cooperation with Developing Countries
SCARP	Salinity Control and Reclamation Project
SLAAS	Sri Lanka Association for the Advancement of Science
SLNP	Sri Lanka National Program
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
USAID	United States Agency for International Development
WMO	World Meteorological Organization
WAPDA	Water and Power Development Authority, Lahore, Pakistan
WHO	World Health Organization
WRI	World Resources Institute
Location Codes:	
HQ	IIMI, Headquarters, Sri Lanka
ICID	International Commission on Irrigation and Drainage, Head Office, New Delhi, India
PAK	IIMI Pakistan, Lahore, Pakistan
ODI	Overseas Development Institute, UK

## 000 GENERALITIES

## 001.4 Research

17679. **Barton, J. H.; Siebeck, W. E. 1992.** Intellectual property issues for the international agricultural research centers: What are the options? Washington, WA, USA: CGIAR Secretariat. iii, 52p. (Issues in agriculture no.4)  
*Agricultural research / Research institutes / Policy / Privatization / Legal aspects / Political aspects*  
(Location: PAK Call No: 001.4 G000 BAR Record No: PK 1351)

## 001.6425 Data processing

17680. **Bonnet, G. 1996.** LOGID, a database diskette for irrigation, drainage, and flood control software. Wageningen, Netherlands: ILRI. In Jurriens, M.; Lenselink, K. J. (Eds.), Irrigation software information: How to find and evaluate the program you need: Report of a workshop, Montpellier, France, 22-25 January 1996. Wageningen, Netherlands: ILRI. pp.27-37.

*Computer software / Databases / Irrigation management / Flood control / Drainage / Computer techniques*  
(Location: HQ Call No: 001.6425 G000 JUR Record No: H 19616)

17681. **Jurriens, M.; Lenselink, K. J. (Eds.) 1996.** Irrigation software information: How to find and evaluate the program you need: Report of a workshop, Montpellier, France, 22-25 January 1996. Wageningen, Netherlands: ILRI. 95p.

*Irrigation management / Computer software / Irrigation programs / Evaluation / Drainage / Flood control / Hydrology*  
(Location: HQ Call No: 001.6425 G000 JUR Record No: H 19613)

17682. **Jurriens, M.; Malaterre, P. O. 1996.** Practical information and evaluation criteria for irrigation programs. Wageningen, Netherlands: ILRI. In Jurriens, M.; Lenselink, K. J. (Eds.), Irrigation software information: How to find and evaluate the program you need: Report of a workshop, Montpellier, France, 22-25 January 1996. Wageningen, Netherlands: ILRI. pp.61-74.

*Computer software / Irrigation management / Irrigation programs / Evaluation*  
(Location: HQ Call No: 001.6425 G000 JUR Record No: H 19618)

17683. **Jurriens, R. 1996.** The ILRI inventory of irrigation software. Wageningen, Netherlands: ILRI. In Jurriens, M.; Lenselink, K. J. (Eds.), Irrigation software information: How to find and evaluate the program you

need: Report of a workshop, Montpellier, France, 22-25 January 1996. Wageningen, Netherlands: ILRI. pp.39-59.

*Computer software / Irrigation management / Evapotranspiration / Crop production / Water requirements / Irrigation scheduling / Surface irrigation / Irrigation canals / Design / Flow control / Simulation*  
(Location: HQ Call No: 001.6425 G000 JUR Record No: H 19617)

17684. **Jurriens, R. 1996.** Inventories of irrigation software and criteria to use. Wageningen, Netherlands: ILRI. In Jurriens, M.; Lenselink, K. J. (Eds.), Irrigation software information: How to find and evaluate the program you need: Report of a workshop, Montpellier, France, 22-25 January 1996. Wageningen, Netherlands: ILRI. pp.9-16.

*Irrigation management / Computer software*  
(Location: HQ Call No: 001.6425 G000 JUR Record No: H 19614)

17685. **Stein, T. M. 1996.** IRRISOFT - A worldwide web database on irrigation and hydrology software. Wageningen, Netherlands: ILRI. In Jurriens, M.; Lenselink, K. J. (Eds.), Irrigation software information: How to find and evaluate the program you need: Report of a workshop, Montpellier, France, 22-25 January 1996. Wageningen, Netherlands: ILRI. pp.17-26.

*Computer software / Databases / Irrigation management / Hydrology / Computer techniques*  
(Location: HQ Call No: 001.6425 G000 JUR Record No: H 19615)

## 006 Special computer methods

17686. **Brand, C. M.; Raasch, G. E.; Kessy, M. E. 1994.** Third Lake watershed assessment and action plan. In Cotroneo, G. V.; Rumer, R. R. (Eds.), Hydraulic engineering '94. Vol.1: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.257-261.

*GIS / Watersheds / Water quality / Assessment / USA / Illinois / Third Lake*  
(Location: HQ Call No: 627 G000 COT Record No: H 19286)

17687. **Cheng, C. Y.; Atkinson, J. F.; DePinto, J. V. 1994.** A coupled GIS-water quality modeling system. In Cotroneo, G. V.; Rumer, R. R. (Eds.), Hydraulic engineering '94. Vol.1: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.247-251.

*GIS / Water quality / Simulation models / Design / Computer techniques / Rivers / USA / Buffalo River*  
(Location: HQ Call No: 627 G000 COT Record No: H 19284)

17688. **Dunyao, Z.; Yinhe, X.; Nakano, M.; Pei, L.; Liming, L. 1996.** Land conservation practices induced by soil loss simulation with GIS in Loess Plateau, China. *Journal of Irrigation Engineering and Rural Planning*, 30:48-61.  
*Land management / Soil conservation / Geomorphology / Erosion / Land resources / Databases / Land use / GIS / Simulation / Computer techniques / Watersheds / Catchment areas / China / Loess Plateau*  
 (Location: HQ Call No: PER Record No: H 18336)
17689. **Greenwood, D. J.; Bannura, R. K.; Powers, M. E. 1994.** GIS application for floodplain analysis and mapping. In Cotroneo, G. V.; Rumer, R. R. (Eds.), *Hydraulic engineering '94. Vol.1: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994.* New York, NY, USA: ASCE. pp.232-236.  
*GIS / Mapping / Flood plains / Analysis / Automation / Hydraulics / Models*  
 (Location: HQ Call No: 627 G000 COT Record No: H 19281)
17690. **Hay, L. E.; Knapp, L. K. 1996.** Integrating a geographic information system, a scientific visualization system, and a precipitation model. *Water Resources Bulletin*, 32(2):357-369.  
*GIS / Computer models / Computer techniques / Precipitation / USA / Gunnison River Basin*  
 (Location: HQ Call No: PER Record No: H 18622)
17691. **Hunt, E. D.; Singh, V. P.; Singh, A. N.; Rala, A. 1995.** Geographic information systems in agriculture: A tool for environmental characterization. In Ingram, K. T. (Ed.), *Rainfed lowland rice: Agricultural research for high-risk environments.* Manila, Philippines: IRRI. pp.19-30.  
*GIS / Agricultural research / Ecology / Environmental effects / Rice / Case studies / India / Uttar Pradesh*  
 (Location: HQ Call No: 633.18 G000 ING Record No: H 17756)
17692. **Kotze, D. C.; Breen, C. M.; Klug, J.; Hughes, J. C. 1995.** WETLAND-USE, a wetland management decision support system for the KwaZulu Natal Midlands, South Africa. In Campbell, K. L. (Ed.), *Versatility of wetlands in the agricultural landscape.* St. Joseph, MI, USA: ASAE. pp.169-179.  
*Wetlands / Land management / Land use / Decision support tools / Models / South Africa / KwaZulu Natal Midlands*  
 (Location: HQ Call No: 333.91 G000 CAM Record No: H 18660)
17693. **Mallawaarachchi, T.; Walker, P. A.; Young, M. D.; Smyth, R. E.; Lynch, H. S. 1996.** GIS-based integrated modelling systems for natural resource management. *Agricultural Systems*, 50(2):169-189.  
*GIS / Natural resources / Mathematical models / Erosion / Land use / Australia / New South Wales / Lachlan Valley*  
 (Location: HQ Call No: PER Record No: H 17807)
17694. **Ogden, F. L.; Saghafian, B.; Krajewski, W. F. 1994.** GIS-based channel extraction and smoothing algorithm for distributed hydrologic modeling. In Cotroneo, G. Rumer, R. R. (Eds.), *Hydraulic engineering '94. Vol.1: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994.* New York, NY, USA: ASCE. pp.237-241.  
*GIS / Hydrology / Models / Watersheds / Channel improvement / USA / Oklahoma / Bird Creek*  
 (Location: HQ Call No: 627 G000 COT Record No: H 19282)
17695. **Osmond, D. L.; Line, D. E.; Gannon, R. W.; Gale, J. A.; Spooner, J.; Coffey, S. W.; Bartenhagen, K. A.; Walker, J. C.; Foster, M. A.; Robillard, P. D.; Lehning, D. W. 1995.** WATERSHEDSS: The integration and use of wetlands and riparian areas in a decision support system. In Campbell, K. L. (Ed.), *Versatility of wetlands in the agricultural landscape.* St. Joseph, MI, USA: ASAE. pp.127-138.  
*Wetlands / Pollution control / Decision support tools / Land management / Water quality / Water resources / GIS / Databases / Computer techniques / Land use / Watersheds / USA / North Carolina*  
 (Location: HQ Call No: 333.91 G000 CAM Record No: H 18657)
17696. **Pereira, J. M. C.; Duckstein, L. 1993.** A multiple criteria decision-making approach to GIS-based land suitability evaluation. *International Journal of Geographical Information Systems*, 7(5):407-424.  
*GIS / Decision making / Land use / Computer software / Case studies*  
 (Location: HQ Call No: P 4265 Record No: H 18716)
17697. **Perera, S.; Sivanantharajah, S.; Mendis, W. T. G.; Wadigamangawa, A. 1996.** Integration of remote sensing and GIS for land use/land cover mapping in Nilwala Basin. *OUR Engineering technology*, 2(1):64-69.  
*GIS / Remote sensing / Land use / Mapping / Satellite surveys / River basin development / Sri Lanka / Nilwala River*  
 (Location: HQ Call No: P 4174 Record No: H 17909)
17698. **Pittman, R. A. 1994.** Pipe utility evaluations with the aid of GIS. In Cotroneo, G. V.; Rumer, R. R. (Eds.),

Hydraulic engineering '94. Vol.1: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.242-246.

*Pipes / Evaluation / GIS / USA / Georgia / Adel*

(Location: HQ Call No: 627 G000 COT Record No: H 19283)

17699. Rickerl, D. H.; Gritzner, J. H.; Wieland, P. K.; Sarrafi, M. 1995. Management options suggested by GIS analysis of wetlands in agricultural landscapes. In Campbell, K. L. (Ed.), Versatility of wetlands in the agricultural landscape. St. Joseph, MI, USA: ASAE. pp.139-148.

*Wetlands / GIS / Watersheds / Water quality / Groundwater / Wildlife / USA / Prairie Pothole Region*

(Location: HQ Call No: 333.91 G000 CAM Record No: H 18658)

17700. Ripple, W. J. (Ed.) 1994. The GIS applications book: Examples in natural resources: A compendium. Bethesda, MD, USA: American Society for Photogrammetry and Remote Sensing. x, 380p.

*GIS / Natural resources / Satellite surveys / Remote sensing / Models / Environment / Water resources / Land use / Land management / Mapping / Groundwater / Water pollution / Forest resources / USA / Indonesia / Nepal*

(Location: HQ Call No: 006 G000 RIP Record No: H 18004)

17701. Taher, S. A.; Labadie, J. W. 1996. Optimal design of water-distribution networks with GIS. Journal of Water Resources Planning and Management, 122(4):301-311.

*GIS / Water distribution / Networks / Models / Optimization / Decision support tools*

(Location: HQ Call No: PER Record No: H 18676)

17702. Thenkabail, P.S.; Nolte, C. 1995. Regional characterization of Inland Valley agroecosystems in Save, Bante, Bassila, and Parakou regions in South-Central Republic of Benin through integration of remote sensing, global positioning system, and ground-truth data in a geographic information systems framework. Ibadan, Nigeria: IITA. 46p. (Inland valley characterization report 1)

*GIS / Remote sensing / Mapping / Land use / Soil management / Benin / Save / Bante / Bassila / Parakou*

(Location: HQ Call No: 006 G196 THE Record No: H 18071)

17703. Tsihrintzis, V. A.; Fuentes, H. R.; Gadipudi, R. K. 1994. Interfacing GIS and water quality models for agricultural areas. In Cotroneo, G. V.; Rumer, R. R. (Eds.), Hydraulic engineering '94. Vol.1: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.252-256.

*GIS / Water quality / Models / USA / South Florida*  
(Location: HQ Call No: 627 G000 COT Record No: H 19285)

17704. Vincent, B.; Vidal, A.; Tabbet, D.; Baqri, A.; Kuper, M. 1996. Use of satellite remote sensing for the assessment of waterlogging or salinity as an indication of the performance of drained systems. In Vincent, B. (Ed.), 16th ICID Congress: Sustainability of Irrigated Agriculture - Evaluation of the Performance of Subsurface Drainage Systems: Transactions of the Workshop, Cairo, Egypt, 15-22 September 1996. New Delhi, India: ICID. pp.203-216.

*Irrigation management / Privatization / Waterlogging / Salinity / Remote sensing*

(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 9167)

17705. Sen, A. 1992. Inequality reexamined. New York, NY, USA: OUP. xiv, 207p.

*Social systems / Social organization / Income / Poverty / Gender / Social aspects*

(Location: HQ Call No: 305 G000 SEN Record No: H 18613)

### 300 SOCIAL SCIENCES

#### 305 Social groups

17706. 1991. Life of rural women in Africa: Rhetoric vs. reality. Rural Progress, 10(1):7-27.

*Rural women / Equity / Women in development / Conferences / Legal aspects / Land ownership / Credit / Public health / Africa*

(Location: HQ Call No: P 4322 Record No: H 19073)

#### 305.4 Women

17707. Cleaver, F.; Elson, D. 1995. Women and water resources: Continued marginalisation and new policies. London, UK: IIED. 18p. (Gatekeeper series no.49)

*Water resource management / Women in development / Gender relations / Water policy*

(Location: HQ, ODI, PAK Call No: F 498 Record No: PK 137)

17708. Kazi, S. 1995. Rural women, poverty and development in Pakistan. Asia-Pacific Journal of Rural Development, 5(1):78-92.

*Women in development / Rural women / Gender / Poverty / Income generation / Households / Credit / Non-governmental organizations / Pakistan*

(Location: HQ Call No: PER Record No: H 17816)

17709. **Castillo, C. D. 1987.** Community profiles: A set of cultural sketches of five regions in Baluchistan. Research report no.11 by MART/AZR Zone research component. 64p.

*Cultural ecology / Institution building / Arid zones / Social structure / Villages / Living standards / Communication / Leadership / Economic situation / Population / Pakistan / Baluchistan*

(Location: PAK Call No: 307.7 G730 CAS Record No: PK 2658)

### 307.7 Specific kinds of communities

17710. **Abhayaratna, M. D. C. 1996.** Land use and land management practices of the Nilwala Basin. *OUR Engineering technology*, 2(1):70-81.

*Land use / Land management / Rehabilitation / Policy / River basin development / Flood control / Sri Lanka / Nilwala River*

(Location: HQ Call No: P 4174 Record No: H 17910)

### 333. Land economics

17711. **Ago, H.; Kessler, A. 1995.** The participatory planning approach to confront land degradation in Latin America., In Japanese Institute of Irrigation and Drainage, Proceedings of the Tokyo Symposium on Sustainable Agriculture and Rural Development: Agriculture for our planet, Tokyo, Japan, 27-29 November 1995. pp.87-98.

*Land management / Participatory management / Watershed management / Soil management / Latin America / Chile / Bolivia / Argentina / Brazil / Paraguay*

(Location: HQ Call No: 338.1 G000 JAP Record No: H 17983)

17712. **Blair, H. W. 1996.** Democracy, equity and common property resource management in the Indian subcontinent. *Development and Change*, 27(3):475-499.

*Privatization / Income / Common property / Decentralization / Local government / Water / Forestry / Participatory management / South Asia*

(Location: ODI Call No: ODI Journals Record No: L 961603)

17713. **Franques, J. T.; Townsend, R. L. 1994.** Regional optimization of non-point source load reduction. In Cotroneo, G. V.; Rumer, R. R. (Eds.), *Hydraulic engineering '94*. Vol.1: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.262-266.

*Watersheds / GIS / Optimization / Pollution control / Land use / Soil properties / Water quality / USA / Florida / Tampa Bay Watershed*

(Location: HQ Call No: 627 G000 COT Record No: H 19287)

17714. **Nel, E.; Smakhtin, V. 1996.** A new rural dispensation? An examination of community development, public works programmes and land resettlement at RA 60 in the Whittlesea district. *Development Southern Africa*, 13(3):441-452.

*Community development / Drought / Land reform / Land tenure / Water supply / Settlement / South Africa*

(Location: ODI Call No: ODI Journals Record No: L 961699)

17715. **Scherr, S. J.; Yadav, S. 1996.** Land degradation in the developing world: Implications for food, agriculture, and the environment to 2020. Washington, DC, USA: IFPRI. vi, 36p. (Food, agriculture, and the environment discussion paper 14)

*Soil degradation / Land development / Land management / Farmers' attitudes / Developing countries / Environmental effects*

(Location: HQ Call No: 333 G000 SCH Record No: H 18556)

17716. **Wachter, D.; North, N. 1996.** Land tenure and sustainable management of agricultural soils. Berne, Switzerland: Geographica Bernensia. x, 39p. (Development and environment reports no.15)

*Soil management / Land tenure / Land ownership / Private ownership / Public ownership / Common property / Conflict / Gender / Land reform / Philippines / Costa Rica / Honduras / Indonesia / Kenya / Eritrea / Tanzania / Somalia / Nicaragua / Thailand*

(Location: HQ Call No: 333 G000 WAC Record No: H 18801)

17717. **Yasutomi, R.; Mihara, M. 1996.** Land use account of the ratio between paddy field, upland field and woodland: A case study of land use for sustainable agriculture in Yachi of Ibaraki Prefecture. *Journal of Irrigation Engineering and Rural Planning*, 30:81-88.

*Land use / Rice / Paddy fields / Sustainable agriculture / Agroforestry / Japan / Yachi*

(Location: HQ Call No: PER Record No: H 18338)

### 333.1 Public ownership and control of land and other natural resources

17718. **Singh, K.; Singh, N.; Singh, R. P. 1996.** Utilisation and development of common property resources: A field study in Punjab. *Indian Journal of Agricultural Economics*, 51(1/2):249-259.

*Common property / Watersheds / Natural resources / Villages / Farm size / Fuelwood / Rural*

*economy / Households / Social participation / India / Punjab*

(Location: HQ Call No: PER Record No: H 19170)

**333.2 Ownership and control of land and natural resources by nongovernmental collectivities**

17719. Allison, P. 1996. Privatisation: Friend or foe? World Water and Environmental Engineering, 19(6):7.

*Privatization / Water supply / Water resources / Public ownership / Private ownership / USA*

(Location: HQ Call No: PER Record No: H 19047)

17720. Nelson, P. 1996. Privatization, methods and madness. Tanzania: Nelson International. 236p.

*Privatization / Private ownership / Economic policy / Legal aspects / Africa / Albania / Botswana / China / Egypt / Kenya / Lesotho / Malawi / Mozambique / Namibia / Poland / Swaziland / Tanzania / Zambia / Zimbabwe*

(Location: HQ Call No: 333.2 G100 NEL Record No: H 19184)

**333.7 Natural resources and energy**

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18076. **Witcover, J.; Rosegrant, M. W. 1995.** Conference on agricultural sustainability, growth, and poverty alleviation in East and Southeast Asia. Report on a conference held at Kuala Lumpur, Malaysia, October 3-6, 1994, sponsored by Environment and Production Technology Division, IFPRI. 30p. (EPTD workshop summary paper no.1)

*Sustainable agriculture / Poverty / Agricultural policy / Rural economy / Water policy / Land use / South East Asia / East Asia / China / Indonesia / Malaysia / Philippines / Thailand / Vietnam*  
(Location: HQ Call No: P 4188 Record No: H 17939)

### 338.14 Factors affecting production

18077. **Carew, D. 1996.** Drought in Cyprus not a pretty picture. World Water and Environmental Engineering, 19(6):17.

*Drought / Irrigation water / Water supply / Water management / Monitoring / Computer techniques / Cyprus / Nicosia*  
(Location: HQ Call No: PER Record No: H 19048)

18078. **Rasmussen, W. O. 1988.** Real-time monitoring of drought area intensity and duration using remote sensing. In Drought, water management and food production: Conference proceedings, Agadir (Morocco), November 21-24, 1985. Mohammedia, Morocco: Fedala. pp.129-138.

*Drought / Remote sensing / Satellite surveys / GIS / Computer techniques / Hydrology / Precipitation / Soil moisture*  
(Location: HQ Call No: 333.91 G236 DRO Record No: H 18129)

18079. **Tetlay, K. A. 1986.** Wheat de-rationing in Pakistan: Some critical issues. Staff paper no.86-5 of PARC. 10p.

*Wheat / Food consumption / Food policy / Food production / Pakistan*  
(Location: PAK Call No: F 456 Record No: PK 118)

### 338.19 Food supply (economic aspects)

18080. **Agcaoili, M. C.; Rosegrant, M. W. 1994.** Prospects for balancing food needs with sustainable resource management in East and Southeast Asia. In DSE; Institute of Strategic and International Studies; IFPRI, Conference on Agricultural Sustainability, Growth and Poverty Alleviation in East and South-East Asia, October 3-6, 1994, Pan Pacific Hotel, Kuala Lumpur, Malaysia. 36p.

*Resource management / Sustainability / Food supply / Food production / Food consumption / Trade policy / Asia / East Asia / South East Asia*  
(Location: HQ Call No: P 4252 Record No: H 18454)

18081. **Falcon, W. P. 1995.** Food policy analysis, 1975-95: Reflections by a practitioner. Washington, DC, USA: IFPRI. 16p. (IFPRI lecture series 3)

*Food policy / Analysis / Poverty*  
(Location: HQ Call No: P 4255 Record No: H 18481)  
Note: Twentieth anniversary lecture presented on 29 November 1995 at IFPRI.

18082. **Huang, J.; Bouis, H. 1996.** Structural changes in the demand for food in Asia. Washington, DC, USA:

IFPRI. viii, 23p. (Food, agriculture, and the environment discussion paper 11)

*Food consumption / Households / Food policy / Asia / China / Taiwan*

(Location: HQ Call No: 338.19 G570 HUA  
Record No: H 18412)

18083. **Islam, N.; Thomas, S. 1996.** Foodgrain price stabilization in developing countries: Issues and experiences in Asia. Washington, DC, USA: IFPRI. viii, 136p. (Food policy review 3)

*Food policy / Price policy / Developing countries / Asia*

(Location: HQ Call No: 338.19 G570 ISL Record No: H 19609)

18084. **Kumar, S. K. 1993.** The economics and politics of food policies. In Leathwood, P.; Horisberger, M.; James, W. P. T. (Eds.) 1993. For a better nutrition in the 21st century. New York, NY, USA: Nestec. pp.99-108. (Nestl nutrition workshop series; vol.27 / IFPRI reprint no.269)

*Food policy / Economic policy / Nutrition / Political aspects / Developing countries*

(Location: HQ Call No: P 4154 Record No: H 17847)

18085. **Nordblom, T. L.; Shomo, F. 1995.** Food and feed prospects to 2020 in the West Asia/North Africa region. Aleppo, Syria: ICARDA. vi, 56p. (ICARDA social science papers)

*Food production / Food security / Food policy / Livestock / Fertilizers / Seed production / Land reform / North Africa / Middle East / Afghanistan / Ethiopia / Sudan / Pakistan / Turkey / Yemen*

(Location: HQ Call No: 338.19 G100 NOR  
Record No: H 18643)

18086. **Pardey, P. G.; Alston, J. M.; Christian, J. E.; Fan, S. 1996.** Hidden harvest: US. benefits from international research aid. Washington, DC, USA: IFPRI. 17p. (Food policy report)

*Agricultural research / Food production / Rice / Wheat / USA*

(Location: HQ Call No: P 2705 Record No: H 19608)

18087. **Williams, M. 1996.** The transition in the contribution of living aquatic resources to food security. Washington, DC, USA: IFPRI. vi, 41p. (Food, agriculture, and the environment discussion paper 13)

*Food security / Fisheries*

(Location: HQ Call No: 338.19 G000 WIL  
Record No: H 18474)

### 338.9 Economic development and growth

18088. **Allanson, P.; Murdoch, J.; Garrod, G.; Lowe, P. 1995.** Sustainability and the rural economy: An evolutionary perspective. Environmental Planning, 27:1797-1814.

*Rural economy / Rural development / Social change / Farm size*

(Location: HQ Call No: P 4275 Record No: H 18726)

18089. **Banuri, T.; Hyden, G.; Juma, C.; Rivera, M. 1994.** Sustainable human development: From concept to operation: A guide for the practitioner. New York, NY, USA: UNDP. 41p. (UNDP discussion paper)

*Economic growth / Social development / Sustainability / Development policy / Development aid / Non-governmental organizations*

(Location: HQ Call No: 338.9 G000 BAN Record No: H 19388)

18090. **Bruno, M.; Pleskovic, B. (Ed.) 1996.** Annual World Bank Conference on Development Economics 1995. Washington, DC, USA: World Bank. v, 383p.

*Economic development / Economic policy / Poverty / Developing countries / Gender / Women / Households / Labor / Irrigation systems / Farmers / Local government / Decentralization / Conflict / Privatization*

(Location: HQ Call No: 338.9 G000 BRU Record No: H 18498)

18091. **Dent, J. 1996.** Stumbling towards gender aware PRA training in Indonesia. In IIED Sustainable Agriculture Programme, PLA notes: Notes on Participatory Learning and Action (Formerly RRA notes). London, UK: IIED. pp.19-22.

*Gender / Training / Women / Participatory rural appraisal / Social participation / Rural development / Indonesia*

(Location: HQ Call No: P 4197 Record No: H 18127)

18092. **Freudenberger, K. S. 1996.** The use of RRA to inform policy: Observations from Madagascar and Guinea. In IIED Sustainable Agriculture Programme, Participation, policy and institutionalisation. London, UK: IIED. pp.28-33.

*Participatory rural appraisal / Policy / Case studies / Social participation / Madagascar / Guinea*

(Location: HQ Call No: P 4354 Record No: H 19395)

18093. **IIED Sustainable Agriculture Programme. 1996.** Participation, policy and institutionalisation. London, UK: IIED. 94p. (PLA notes no.27)

*Participatory rural appraisal / Policy / Social participation / Rural development / Farmer participation / Women in development / Gender / Wetlands / Non-governmental organizations / Institution building / India / Ethiopia / Madagascar / Guinea / Pakistan / Zambia / Mali / Indonesia / Philippines / Nicaragua*

(Location: HQ Call No: P 4354 Record No: H 19390)

18094. **IIED Sustainable Agriculture Programme. 1996.** PLA notes: Notes on Participatory Learning and Action (Formerly RRA notes) London, UK: IIED. 90p. (PLA notes no.25)

*Participatory rural appraisal / Social participation / Rural development / Evaluation / Mapping / Training / Gender differences / Latin America / Mozambique / Uganda / Indonesia / Sierra Leone / Nepal / Vietnam*

(Location: HQ Call No: P 4197 Record No: H 18125)

18095. **Jayakaran, R. I. 1996.** Participatory learning and action: A five-minute reference booklet. Madras, India: World Vision of India. 64p.

*Participatory rural appraisal / Training / Social participation / Community development*

(Location: HQ Call No: P 4254 Record No: H 18479)

18096. **Pijnenburg, B.; de Winter, D.; Gueye, B. 1996.** Different perspectives: Experiences with RRA in Zambezi District, Zambia. In IIED Sustainable Agriculture Programme, Participation, policy and institutionalisation. London, UK: IIED. pp.77-80.

*Rapid rural appraisal / Farmer participation / Farmers' attitudes / Rural development / Zambia / Zambezi District*

(Location: HQ Call No: P 4354 Record No: H 19400)

18097. **Root, H. L. 1995.** Managing development through institution building. Manila, Philippines: ADB. 30p. (ADB occasional papers no.12)

*Public administration / Local government / Public sector / Private sector / Non-governmental organizations / Poverty / Equity / Rural development / Development policy / Political aspects*

(Location: HQ Call No: 338.9 G000 ROO Record No: H 18282)

18098. **Seeley, J.; Nabaitu, J.; Taylor, L.; Kajura, E.; Bukunya, T.; Kabunga, E.; Ssembajja, F. 1996.** Revealing gender differences through well-being ranking in Uganda. In IIED Sustainable Agriculture Programme, PLA notes: Notes on Participatory Learning and Action (Formerly RRA notes). London, UK: IIED. pp.14-18.

*Gender differences / Households / Participatory rural appraisal / Social participation / Rural development / Evaluation / Uganda*

(Location: HQ Call No: P 4197 Record No: H 18126)

18099. **Shah, A. 1996.** Challenges in influencing public policy: An NGO perspective. In IIED Sustainable Agriculture Programme, Participation, policy and institutionalisation. London, UK: IIED. pp.48-51.

*Policy / Non-governmental organizations / Social participation / Participatory management / India*

(Location: HQ Call No: P 4354 Record No: H 19398)

18100. **Slocum, R.; Wichhart, L.; Rocheleau, D.; Thomas-Slayter, B. (Eds.) 1995.** Power, process and participation: Tools for change. London, UK: Intermediate Technology Publications. xvii, 251p.

*Social participation / Social change / History / Participatory rural appraisal / Women in development / Development policy / Community development / Social aspects / Sustainability / Research methods / Mapping / Communication / Labor / Gender / Households / Land use / Legal aspects / Decision making*

(Location: HQ Call No: 338.9 G000 SLO Record No: H 17958)

18101. **Steinich, M. 1996.** Participatory shaping of institutional landscapes. In IIED Sustainable Agriculture Programme, Participation, policy and institutionalisation. London, UK: IIED. pp.52-56.

*Rural development / Participatory rural appraisal / Villages / Mali*

(Location: HQ Call No: P 4354 Record No: H 19399)

18102. **Takahashi, A. 1969.** Land and peasants in Central Luzon: Socio-economic structure of a Philippine village. Honolulu, HI, USA: East-West Center Press. x, 168p.

*Rural development / Land ownership / Land tenure / Farm economics / Rural economy / Households / Farmers / Irrigation water / Crop production / Paddy fields / Villages / Employment / Social aspects / Rural sociology / Labor / Philippines / Luzon*

(Location: HQ Call No: 338.9 G732 TAK Record No: H 18025)

18103. **Thompson, J.; Abbot, J.; Hinchcliffe, F. 1996.** Participation, policy and institutionalisation: An overview. In IIED Sustainable Agriculture Programme, Participation, policy and institutionalisation. London, UK: IIED. pp.21-27.

*Participatory rural appraisal / Policy*

(Location: HQ Call No: P 4354 Record No: H 19394)

18104. **Tisch, S. J.; Wallace, M. B. 1994.** Dilemmas of development assistance: The what, why, and who of foreign aid. Boulder, CO, USA: Westview Press. xv, 182p. (Dilemmas in world politics)

*Development aid / Development policy / Economic development / Political aspects*

(Location: HQ Call No: 338.9 G000 TIS Record No: H 19110)

18105. **WAPDA. 1988.** Northern areas regional development plan reconnaissance report Gilgit District: Appendix - I, Part I. Main report-on Northern Areas Regional Development Plan. v.p.

*Regional development / Geology / Climate / Communication / Agriculture / Land use / Institutions / Population / Education / Health / Industrialization / Marketing / Tourism / Soils / Irrigation / Crops / Cropping systems / Crop yield / Livestock / Fodder / Fisheries / Constraints / Deforestation / Erosion / Cultivated lands / Development plans / Soil moisture / Management / Hydroelectric schemes / Agricultural economics / Evaluation / Pakistan / Gilgit*

(Location: PAK Call No: 338.9 G730 WAP Record No: PK 554)

18106. **WAPDA. 1988.** Northern areas regional development plan reconnaissance report Gilgit District: Appendix - I, Part II. Main report-on Northern Areas Regional Development Plan. v.p.

*Regional development / Geology / Climate / Communication / Agriculture / Land use / Institutions / Population / Education / Health / Industrialization / Marketing / Tourism / Soils / Irrigation / Crops / Cropping systems / Crop yield / Livestock / Fodder / Fisheries / Constraints / Deforestation / Erosion / Cultivated lands / Development plans / Soil moisture / Management / Hydroelectric schemes / Agricultural economics / Evaluation / Pakistan / Gilgit*

(Location: PAK Call No: 338.9 G730 WAP Record No: PK 558)

18107. **Wijayaratna, C. M. 1996.** Rural appraisal and sustainable development. Paper presented at the Workshop on Participatory Rural Appraisal, organized by the Forest Department of Sri Lanka and sponsored by Asia Pacific Agroforestry Network, APAN, 27-31 May 1996, Sri Lanka Forestry Institute, Nuwara Eliya, Sri Lanka. 18p.

*Rural development / Sustainability / Participatory rural appraisal / Watersheds / Farming / Sri Lanka / Mahameegaswewa*

(Location: HQ Call No: IIMI 338.9 G744 WIJ Record No: H 18590)

### 338.91 International development and growth

18108. **IFPRI. 1996.** Feeding the world, preventing poverty, and protecting the earth: A 2020 vision. Washington, DC, USA: IFPRI. 28p.

*Agricultural economics / Poverty / Environmental degradation / Population growth / Water scarcity / Fisheries / Soil fertility*

(Location: HQ Call No: 338.19 G000 IFP Record No: H 18413)

18109. **Pradhan, B. B. 1985.** Integrated rural development projects in Nepal - A review. Kathmandu, Nepal: ICIMOD. v, 42p. + appendices. (Occasional paper no.2)

*Rural development / Development projects / Watersheds / Community forestry / Evaluation / Nepal*

(Location: PAK Call No: F 461 Record No: PK 2686)

### 339.46 Poverty

18110. **Edition, D.** Wealth and poverty in rural India. GeoJournal, 11(4):369-382.

*Rural development / Poverty / Households / Income distribution / India*

(Location: PAK Call No: F 293 Record No: PK 2697)

18111. **Rahman, A. 1995.** The state of the world rural poverty: A profile of Asia. Rome, Italy: IFAD. iv, 67p.

*Poverty / Population / Statistics / Credit / Food security / Rural economy / Developing countries / Development policy / Rural women / Landlessness / Land tenure / Conflict / Resource management / Irrigation / Crops / Diversification / Economic policy / Water users' associations / Farmer participation / Asia / Bangladesh / Bhutan / Cambodia / China / India / Indonesia / Laos / Nepal / Pakistan / Papua New Guinea / Philippines / Sri Lanka / Thailand / Vietnam*

(Location: HQ Call No: 339.46 G570 RAH Record No: H 17766)

### 339.5 Macroeconomic policy

18112. **Netherlands Scientific Council for Government Policy. 1995.** Sustained risks: A lasting phenomenon. The Hague, Netherlands: The Council. 205p. (Reports to the government 44)

*Development policy / Economic policy / Sustainability / Risks / Food supply / Environmental policy / Energy / Water supply / Water quality / Netherlands*

(Location: HQ Call No: 339.5 G916 NET Record No: H 19263)

18113. **Straub, C. P. 1994.** Water and disease. In Ruttan, V. W. (Ed.), *Health and sustainable agricultural development: Perspectives on growth and constraints*. Boulder, CO, USA: Westview Press. pp.79-84.

*Public health / Water supply / Water quality / Waterborne diseases*

(Location: HQ Call No: 362.1 G000 RUT Record No: H 19193)

### 362.5 Problems of and services to the poor

18114. **von Braun, J. (Ed.) 1995.** Employment for poverty reduction and food security. Washington, DC, USA: IFPRI. xvi, 321p. (IFPRI occasional papers)

*Poverty / Employment / Policy / Food security / Development aid / Developing countries / Economic aspects / Bangladesh / China / India / Africa / Botswana / Tanzania / Niger / Zimbabwe / Ethiopia / Latin America / Maharashtra*

(Location: HQ Call No: 362.5 G000 VON Record No: H 17757)

### 363.34 Disasters

18115. **Vietnam. Ministry of Water Resources. 1995.** First update of the strategy and action plan for mitigating water disasters in Viet Nam. Hanoi, Vietnam: UNEP; UN Department of Humanitarian Affairs. 13p.

*Water management / Natural disasters / Vietnam*  
(Location: ICID Record No: 27368)

### 363.7 Environmental problems and services

18116. **1996.** Environmental data on the Internet. *World Water and Environmental Engineering*, 19(9):37-38.

*Environment / Communication / Networks / Databases / Computer techniques*

(Location: HQ Call No: PER Record No: H 19460)

18117. **Bradford, R. R. 1974.** Nitrogen and phosphorus losses from agronomy plots in North Alabama. Washington, WA, USA: US. Government Printing Office. vii, 40p. (EPA-66/2-74-033)

*Nitrogen / Agronomy / Environmental control / Pollution / USA / Alabama*

(Location: PAK Call No: 363.7 G430 BRA Record No: PK 2670)

18118. **Dharmasena, P. H. M. 1996.** A proposal for developing an alternative management system through a Sorjan Cultivation System to offset the environment degradation in wetland areas in the Nilwala Basin. *OUR Engineering technology*, 2(1):82-86.

*Land development / Land use / Environmental degradation / Environmental control / Wetlands / Fish farming / Cropping systems / Sri Lanka / Nilwala River*

(Location: HQ Call No: P 4174 Record No: H 17911)

18119. **Hemmi, K.; Cool, J. C. (Eds.) 1995.** Educating new environmental leadership for Asia: The report of the initiative for development of environmental alliances through leadership. Morrilton, AR, USA: Winrock International. xxii, 266p.

*Environmental policy / Environmental sustainability / Sustainable agriculture / Natural resources / Education / Leadership / Asia / Japan / Bangladesh / China / India / Nepal / Indonesia / Pakistan / Philippines / Thailand / Vietnam / USA*

(Location: HQ Call No: 363.7 G570 HEM Record No: H 17923)

18120. **Mathews, J. T.; Tunstall, D. B. 1991.** Moving toward eco-development: Generating environmental information for decisionmakers. WRI Issues and Ideas, August:8p.

*Environmental sustainability / Monitoring / Environmental policy / Indicators / Information services / Data collection / Decision making / Organizations / Institutions / Pollution*

(Location: HQ Call No: P 4171 Record No: H 17882)

18121. **Munasinghe, M.; Cruz, W. 1995.** Economywide policies and the environment: Lessons from experience. Washington, DC, USA: World Bank. ix, 86p. (World Bank environment paper no.10)

*Economic policy / Environmental effects / Sustainability / Decision making / Poverty / Case studies*

(Location: HQ Call No: 363.7 G000 MUN Record No: H 19425)

18122. **O'Farrell, T. P.; Bishop, D. F.; Cassel, A. F. 1973.** Nitrogen removal by ammonia stripping. Washington, WA, USA: US. Government Printing Office. vi, 23p. (EPA-670/2-73-040)

*Pollution control / Environmental effects / Nitrogen / USA*

(Location: PAK Call No: 363.7 G430 OFA Record No: PK 2667)

18123. **Pressley, T. A.; Bishop, D. F.; Pinto, A. P.; Cassel, A. F. 1973.** Ammonia-nitrogen removal by breakpoint chlorination. Washington, WA, USA: US. Government Printing Office. vi, 45p. (EPA-670/2-73-058)

*Pollution control / Waste waters / Nitrogen / Water pollution / USA*

(Location: PAK Call No: 363.7 G430 PRE Record No: PK 2671)

18124. **Sombroek, W. G. 1995.** Agriculture and environment: Integrated rehabilitation, conservation and development of land and water resources in different land use systems. In Japanese Institute of Irrigation and Drainage, Proceedings of the Tokyo Symposium on Sustainable Agriculture and Rural Development: Agriculture for our planet, Tokyo, Japan, 27-29 November 1995. pp.39-54.

*Environmental policy / Environmental sustainability / Water conservation / Land development / Rehabilitation / Niger / Keita*  
(Location: HQ Call No: 338.1 G000 JAP Record No: H 17979)

18125. **Weaver, R. D.; Harper, J. K.; Gillmeister, W. J. 1996.** Efficacy of standards vs. incentives for managing the environmental impacts of agriculture. Journal of Environmental Management, 46:173-188.

*Environmental effects / Water quality / Water pollution / Models / Case studies / Tillage / Fertilizers / USA / Pennsylvania*  
(Location: HQ Call No: P 4273 Record No: H 18724)

18126. **WHO. 1992.** Our planet, our health: Report of the WHO Commission on Health and Environment. Geneva, Switzerland: WHO. Xxxii, 282p.

*Environmental policy / Environmental effects / Public health / Food production / Water resources / Energy / Human ecology / Poverty / Urbanization / Settlement / Population growth / Industrialization / Agricultural development / Land ownership / Land tenure / Forestry / Water quality / Waterborne diseases / Sanitation / Developing countries / Living conditions / Pollution / Climate*  
(Location: HQ Call No: 363.7 G000 WHO Record No: H 17863)

18127. **World Bank. 1996.** Facing the global environment challenge: A progress report on World Bank global environment operations, September 1995 - January 1996. Washington, DC, USA: World Bank. v.p.

*Environmental effects*  
(Location: ICD Record No: 27033)

18128. **World Bank. 1995.** Mainstreaming the environment: The World Bank Group and the environment since the Rio Earth Summit: Fiscal 1995: Summary. Washington, DC, USA: World Bank. iii, 59p.

*Environmental policy / Environmental Sustainability / Natural resources / Development policy / Development projects / Development aid / Water resource management / Forest management*  
(Location: HQ Call No: 363.7 G000 WOR Record No: H 17963)

### 363.8 Food supply

18129. **Alderman, H.; Garcia, M.** Poverty, household food security, and nutrition in rural Pakistan. Washington, DC, USA: IFPRI. viii, 108p. (IFPRI research report 96)

*Food security / Poverty / Households / Nutrition / Health / Rural economy / Income / Pakistan*  
(Location: HQ, PAK Call No: 363.8 G730 ALD Record No: PK 189)

18130. **Sharma, M.; Garcia, M.; Qureshi, A.; Brown, L. 1996.** Overcoming malnutrition: Is there an ecoregional dimension? Washington, DC, USA: IFPRI. vi, 19p. (Food, agriculture, and the environment discussion paper 10)

*Nutrition / Public health / Food production / Poverty / Households / Asia / Africa South of Sahara*  
(Location: HQ Call No: 363.8 G000 SHA Record No: H 18472)

## 500 NATURAL SCIENCES AND MATHEMATICS

### 551.48 Hydrology

18131. **Amatya, D. M.; Chescheir, G. M.; Skaggs, R. W. 1995.** Hydrologic effects of wetland location and size in an agricultural landscape. In Campbell, K. L. (Ed.), Versatility of wetlands in the agricultural landscape. St. Joseph, MI, USA: ASAE. pp.477-488.

*Wetlands / Hydrology / Watersheds / Simulation models / Computer models / Water management / USA / North Carolina*  
(Location: HQ Call No: 333.91 G000 CAM Record No: H 18662)

18132. **DeShon, G. C.; Thompson, A. L.; Sievers, D. M.; Hjermfelt, A. T. 1995.** Hydraulic properties and relationships for the design of subsurface flow wetlands. In Campbell, K. L. (Ed.), Versatility of wetlands in the agricultural landscape. St. Joseph, MI, USA: ASAE. pp.585-596.

*Wetlands / Flow / Flumes / Design*  
(Location: HQ Call No: 333.91 G000 CAM Record No: H 18664)

18133. **Haan, C. T.; Johnson, H. P.; Brakensiek, D. L. (Eds.) 1982.** Hydrologic modeling of small watersheds. St. Joseph, MI, USA: ASAE. x, 533p. (ASAE monograph no.5)

*Hydrology / Models / Watersheds / Stochastic process / Calibrations / Precipitation / Infiltration / Surface runoff / Simulation / Evapotranspiration / Groundwater / Erosion / Sedimentation / Statistical analysis*  
(Location: HQ Call No: 551.48 G000 HAA Record No: H 19039)

18134. **Larson, C. L.; Onstad, C. A.; Richardson, H. H.; Brooks, K. N. 1982.** Some particular watershed models. In Haan, C. T.; Johnson, H. P.; Brakensiek, D. L. (Eds.), Hydrologic modeling of small watersheds. St. Joseph, MI, USA: ASAE. pp.409-434.

*Models / Watersheds / Hydrology / Stream flow / Reservoir operation*

(Location: HQ Call No: 551.48 G000 HAA Record No: H 19044)

18135. **Missimer, T. M.; Walker, C. W.; Duever, M. J.; Owosina, A. 1995.** Hydrologic considerations in the creation of wetlands in the Florida phosphate mining district. In Campbell, K. L. (Ed.), Versatility of wetlands in the agricultural landscape. St. Joseph, MI, USA: ASAE. pp.67-74.

*Wetlands / Hydrology / Watersheds / Water balance / USA / Florida*

(Location: HQ Call No: 333.91 G000 CAM Record No: H 18652)

18136. **Nakagawa, K.; Edagawa, H.; Nandakumar, V.; Aoki, M. (Eds.) 1995.** Longterm hydrometeorological data in Sri Lanka: Data book of "hydrological cycle in humid tropical ecosystems." Part I. Special Research Project on Global Environmental Change, University of Tsukuba, Japan. xxx, 474p.

*Hydrology / Climate / Sri Lanka / India / Colombo / Bombay*

(Location: HQ Call No: 551.48 G744 NAK Record No: H 18475)

18137. **Qingchao, Y. E. 1996.** Researches on environmental changes and water and sediment transport of the Yellow River Basin. Water Resources Journal, 188:22-28.

*Hydrology / River basins / Environmental effects / Sedimentation / Erosion / China / Yellow River Basin*

(Location: HQ, ODI Call No: PER Record No: H 18630)

18138. **Read, W. W. 1996.** Hillside seepage and the steady water table. I: Theory. Advances in Water Resources, 19(2):63-73.

*Water table / Seepage / Mountains / Hydrology*

(Location: HQ Call No: PER Record No: H 17794)

18139. **Read, W. W. 1996.** Hillside seepage and the steady water table. II: Applications. Advances in Water Resources, 19(2):75-81.

*Water table / Seepage / Mountains / Hydrology / Aquifers*

(Location: HQ Call No: PER Record No: H 17795)

18140. **Tase, N.; Shimada, J.; Tanaka, T. (Eds.) 1995.** Hydrological study data in Sri Lanka: Data book of "hydrological cycle in humid tropical ecosystems." Part II.

Special Research Project on Global Environmental Change, University of Tsukuba, Japan. iii, 110p.

*Soil properties / Water quality / Precipitation / Rivers / Groundwater / Catchment areas / Soil water / Sri Lanka / Peradeniya / Batalagoda / Puttalam / Maha Illuppallama*

(Location: HQ Call No: 551.48 G744 TAS Record No: H 18476)

18141. **Woodward, D. 1995.** Hydrology tools for wetland determination - Field test. In Campbell, K. L. (Ed.), Versatility of wetlands in the agricultural landscape. St. Joseph, MI, USA: ASAE. pp.21-26.

*Wetlands / Hydrology / Field tests / Handbooks*

(Location: HQ Call No: 333.91 G000 CAM Record No: H 18647)

#### 551.483 Rivers and streams

18142. **Schumm, S.A.; Winkley, B.R. (Eds.) 1994.** The variability of large alluvial rivers. New York, NY, USA: ASCE. Xiii, 467p.

*Rivers / Flood control / Sedimentation / Hydrology / USA / Egypt / Colombia / Pakistan / Australia / Indonesia / Java / Canada / Venezuela / Bangladesh / China / West Africa / Mississippi River / California / Sacramento River Magdalena River / Nile River / Sindh / Indus River / Murray River / Citanduy River / British Columbia / Fraser River / Orinoco River / Red River / Canadian River / Niobrara River / Alabama River / Platte River / Yellow River / Rio Grand Valley / Niger River / Arial Khan River*

(Location: HQ Call No: 551.483 G000 SCH Record No: H 19251)

#### 551.488 Runoff

18143. **Guo, J. C. Y.; Urbonas, B. 1996.** Maximized detention volume determined by runoff capture ratio. Journal of Water Resources Planning and Management, 122(1):33-39.

*Runoff / Rain / Precipitation / Catchment yield / Watersheds / Water quality / Drainage / Computer models / Water storage / Case studies / Statistical analysis / USA*

(Location: HQ Call No: PER Record No: H 17825)

18144. **Segarra-Garcia, R.; Basha-Rivera, M. E. 1996.** Optimal estimation of storage-release alternatives for storm-water detention systems. Journal of Water Resources Planning and Management, 122(6):428-436.

*Water quality / Simulation models / Mathematical models / Constraints / Optimization / Water*

*storage / Hydraulics / Runoff / Water pollution / Pollution control*

(Location: HQ Call No: PER Record No: H 19319)

**551.49 Groundwater**

18145. **Donkin, A.D.; Smithers, J.C.; Lorentz, S.A.; Schulze, R. E. 1995.** Direct estimation of total evaporation from a Southern African wetland. In Campbell, K. L. (Ed.), *Versatility of wetlands in the agricultural landscape*. St. Joseph, MI, USA: ASAE. pp.501-513.

*Wetlands / Evaporation / Water table / Water budget / Groundwater / Recharge / Southern Africa / Ntabamhlope Wetland*

(Location: HQ Call No: 333.91 G000 CAM Record No: H 18663)

**551.57 Hydrometeorology**

18146. **Piechota, T. C.; Dracup, J. A. 1996.** Drought and regional hydrologic variation in the United States: Associations with the El Nino-Southern oscillation. *Water Resources Journal*, 189:50-65.

*Drought / Hydrology / Climate / Agroclimatology / USA*

(Location: HQ Call No: PER Record No: H 19626)

**551.577 Precipitation**

18147. **Adiku, S. G. K.; Stone, R. C. 1995.** Using the Southern Oscillation Index for improving rainfall prediction and agricultural water management in Ghana. *Agricultural Water Management*, 29(1):85-100.

*Rain / Forecasting / Water management / Drought / Rain-fed farming / Ghana*

(Location: HQ Call No: PER Record No: H 17784)

18148. **Panabokke, C. R. 1996.** The geomorphological setting and salinity intrusion in the lower Nilwala Basin. *OUR Engineering technology*, 2(1):17-19.

*River basin development / Hydrology / Geomorphology / History / Salinity / Sri Lanka / Nilwala River*

(Location: HQ Call No: P 4174 Record No: H 17905)

**574.19 Biophysics and biochemistry**

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DC, USA: IFPRI. V, 14p. (Food, Agriculture, and the environment discussion paper 2)

*Food security / Developing countries*

(Location: HQ Call No: 574.19 G000 LEI Record No: H 18470)

574.5Ecology

18150. **Dovers, S. R.; Norton, T. W. 1994.** Toward an ecological framework for sustainability: Considerations for ecosystem management. *Pacific Conservation Biology*, Vol.1. Sydney, Australia: Surrey Beatty & Sons. pp.283-293.

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(Location: HQ Call No: P 2758 Record No: H 17895)

Note: :Article based on a paper presented to a conference on Southern Temperate Ecosystems: Origins and Diversification, held in Hobart, Australia, 18-22 January 1993.

18151. **Imam, E.; Ibrahim, K. 1996.** Minimum Nile drainage needs for sustainable estuarine ecosystem. Report, Water Resources Strategic Research Activity, National Water Research Center. Ministry of Public Works and Water Resources, and USAID, Cairo, Egypt. xi, 38p. + annexes. (WRSR publication series no.16)

*Water resources / River basins / Drainage / Ecosystems / Fisheries / Environmental effects / Estuaries / Water pollution / Pollution control / Egypt / Nile River*

(Location: HQ Call No: P 4371 Record No: H 19482)

18152. **Khaliq, P.; Hashmi, L. A.; Qazi, M. H. 1995.** Agriculture and environment. *Progressive Farming*, 15(5):16-23.

*Environmental effects / Environmental degradation / Soil degradation / Erosion / Waterlogging / Irrigation effects / Fertilizers / Nitrogen / Pesticide residues / Pakistan*

(Location: HQ Call No: P 4291 Record No: H 18977)

18153. **Sri Lanka. Central Environmental Authority. Wetland Conservation Project. 1995.** Wetland site report: Udawalawe reservoir. Colombo, Sri Lanka: CEA. xii, 69p.

*Reservoirs / Wetlands / Geology / Geomorphology / Soils / Climate / Hydrology / Water quality / Groundwater / Catchment areas / Natural resources / Ecology / Water resource management / Land use / Social aspects / Assessment / Sri Lanka / Udawalawe*

(Location: HQ Call No: 574.5 G744 SRI Record No: H 17867)

18154. Sri Lanka. Central Environmental Authority. **Wetland Conservation Project. 1995.** Wetland site report and conservation management plan: Koggala lagoon. Colombo, Sri Lanka: CEA. xii, 82p.

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(Location: HQ Call No: 574.5 G744 SRI Record No: H 17868)

18155. Srivastava, J.; Smith, N. J. H.; Forno, D. 1996. Biodiversity and agriculture: Implications for conservation and development. Washington, DC, USA: World Bank. x, 26p. (World Bank technical paper no.321)

*Natural resources / Environmental effects / Ecology / Agricultural development / Sustainable agriculture*

(Location: HQ Call No: 574.5 G000 SRI Record No: H 18760)

18156. WRI; UNEP; IUCN. 1995. National biodiversity planning: Guidelines based on early experiences around the world. Baltimore, MD, USA: WRI; IUCN; UNEP. xiii, 161p.

*Natural resources / Ecology / Environmental policy / Environmental sustainability / National planning / Case studies*

(Location: HQ Call No: 574.5 G000 WRI Record No: H 17851)

#### 574.52652 Deserts

18157. Sidibe, C. M. K. 1995. Initiatives to combat desertification in the Sahel. In Japanese Institute of Irrigation and Drainage, Proceedings of the Tokyo Symposium on Sustainable Agriculture and Rural Development: Agriculture for our planet, Tokyo, Japan, 27-29 November 1995. pp.119-128.

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(Location: HQ Call No: 338.1 G000 JAP Record No: H 17986)

#### 600 TECHNOLOGY

##### Promotion of health

18158. Singh, J.; Puri, I. M. 1996? Malaria incidental to engineering construction. Malaria Institute of India. vi,

74p. + annexes. (Health Bulletin no.32; Malaria Bureau no.12)

*Engineering / Construction / Malaria / Disease vectors / Public health / Labor / Water supply / Drains / Sanitation / Irrigation systems / Irrigation canals / Irrigation effects / India*

(Location: HQ Call No: P 4319 Record No: H 19069)

#### 621.312 Generation, modification and storage of electric power

18159. 1995. The Lao People's Democratic Republic embarks on a major hydro development programme. Water Resources Journal, 187:101-104.

*Hydroelectric schemes / Development projects / Development policy / Reservoirs / Laos / Theun River / Khammouane Province / Bolavan Plateau / Attapeu Province / Nam Song River*

(Location: HQ Call No: PER Record No: H 18629)

18160. Isambert, F. 1995. Learning from failures at small hydro schemes. Water Resources Journal, 187:30-33.

*Hydroelectric schemes / Project appraisal / Economic development*

(Location: HQ Call No: PER Record No: H 18627)

#### 621.3678 Remote sensing technology

18161. Fook, L. K.; Bolhassan, J.; Mahmood, N. N. 1992. Soil erosion mapping using remote sensing and GIS techniques for land-use planners. Asia-Pacific Remote Sensing Journal, 5(1):105-116.

*Erosion / Models / Soil management / Remote sensing / Satellite surveys / GIS / Mapping / Land use / Land development / Project planning / Malaysia / Selangor / Upper Klang Valley*

(Location: HQ Call No: P 4346 Record No: H 19276)

18162. India. National Remote Sensing Agency. Remote sensing contribution to sustainable water development: Two decades of excellence. Hyderabad, India: Water Resources Group. v.p.

*Remote sensing / Water resources development / Sustainability / India*

(Location: ICID Record No: 27058)

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Conference, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. xxii, 726p.

*Hydraulics / Design / Hydrology / Flood control / Irrigation canals / Models / Reservoir operation / Optimization / Forecasting / GIS / Water quality / Watersheds / Groundwater management / Aquifers / Models / Sedimentation / Water resources / Rivers / Wetlands / USA / Bangladesh / India / Taiwan / Mississippi River Basin / Lake Ontario / Lake Michigan / Louisiana / Missouri River / North Carolina / New York / Rio Grande River Basin / Great Lakes Region / Arizona / St. Marys River / Havana / Hotophia Creek / Farakka / Taipei Basin*

(Location: HQ Call No: 627 G000 COT Record No: H 19279)

18164. Cotroneo, G. V.; Rumer, R. R. (Eds.) 1994. Hydraulic engineering '94. Vol.2: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.727-1356.

*Hydraulics / Hydrology / Mathematical models / Stochastic process / Reservoirs / Rivers / Models / Open channels / Water quality / USA*

(Location: HQ Call No: 627 G000 COT Record No: H 19294)

18165. Dukker, P.; Khan, M. A. 1993. Comparison of rating curves for Awagat branch drain 1985-1990. Wageningen, The Netherlands: ILRI. ii, 33p. (NRAP report no.51 / IWASRI publication no.132)

*Surface water / Hydrology / Flow / Pakistan*

(Location: PAK Call No: 627 G730 DUK Record No: PK 2677)

18166. Lees, S. H. 1974. Hydraulic development as a process of response. Human Ecology, 2(3):159-175.

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18167. Levi, E. 1995. The science of water: The foundation of modern hydraulics. New York, NY, USA: ASCE. xx, 649p.

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(Location: HQ Call No: 627 G000 LEV Record No: H 19250)

18168. Mladineo, N.; Margeta, J.; Brans, J. P.; Marschal, B. 1987. Multicriteria ranking of alternative locations for small scale hydro plants. European Journal of Operational Research, 31:215-222.

*Energy resources / Hydroelectric schemes / Planning / Decision making / Sensitivity analysis*

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18169. Yan, Y.; Hayter, E. J. 1994. Numerical modeling of fluid mud transport in estuaries. In Cotroneo, G. V.; Rumer, R. R. (Eds.), Hydraulic engineering '94. Vol.2: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.1070-1074.

*Hydrology / Sedimentary materials / Estuaries / Mathematical models*

(Location: HQ Call No: 627 G000 COT Record No: H 19301)

#### 627.122 Silt and sediment

18170. Shrestha, P. L.; Govindaraju, R. S.; Orlob, G. T. 1994. Modeling kinetics of sediment removal in water columns. In Cotroneo, G. V.; Rumer, R. R. (Eds.), Hydraulic engineering '94. Vol.2: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.1065-1069.

*Sedimentation / Hydrology / Mathematical models*  
(Location: HQ Call No: 627 G000 COT Record No: H 19300)

#### 627.4 Flood control

18171. Amarasinghe, O. 1996. Nilwala Ganga Flood Protection Scheme: A re-appraisal. OUR Engineering technology, 2(1):104-114.

*Flood control / River basin development / Environmental effects / Project appraisal / Cost benefit analysis / Sri Lanka / Nilwala River*

(Location: HQ Call No: P 4174 Record No: H 17912)

18172. Delpachitre, U. 1996. Nilwala Ganga Flood Protection Scheme. OUR Engineering technology, 2(1):5-14.

*Flood control / River basin development / Hydrology / Sri Lanka / Nilwala River*

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18173. Demissie, M. 1996. Sediment load during flood events for Illinois streams. Water International, 21(3):131-137.

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18174. Gamble, D.W.; Meentemeyer, V. 1996. The role of scale in research on the Himalaya-Ganges-Brahmapu-

tra interaction. Mountain Research and Development, 16(2):149-155.

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18175. **Gunawardana, O. A.; Samaranayake, R. 1996.** Hydraulic modelling of the Nilwala Ganga floods. OUR Engineering technology, 2(1):46-55.

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18176. **Jayasundara, B. K.; Ratnasara, G. V.; Nis-sanka, N. A. I. U. K.; Selvarajah, S. 1996.** Problems created by Nilwala Ganga Flood Protection Scheme and suggested solutions. OUR Engineering technology, 2(1):15-16.

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18177. **Thompson, P. M.; Sultana, P. 1996.** Operation and maintenance performance and conflicts in flood-control projects in Bangladesh. Water Resources Development, 12(3):311-328.

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#### 627.5 Reclamation

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*Measurement / Hydraulics / Soils / Water table / Drilling*

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18179. Sardar Sarovar: You be the judge. Gandhinagar, India: Sardar Sarovar Narmada Nigam Ltd. v.p.

*Dams / India*

(Location: ICID Record No: 27400)

18180. **Abt, S. R.; Wittler, R. J.; Ruff, J. F. 1996.** Design flood impacts on evaluating dam failure mechanisms. Water International, 21(3):152-157.

*Dam construction / Design criteria / Erosion / Flood control / Reservoirs / USA / Colorado*

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18181. **Adeloye, A. J. 1996.** An opportunity loss model for estimating the value of streamflow data for reservoir planning. Water Resources Management, 10(1):45-79.

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18183. **Al-Muttair, F. F.; Sendil, U.; Al-Turbak, A. S. 1995.** Management of recharge dams in Saudi Arabia. Water Resources Journal, 186:6-14.

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18184. **Bridle, R. 1996.** Building the Pollan Dam. World Water and Environmental Engineering, 19(1):24-25.

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18185. **Chunhong, H. 1995.** Controlling reservoir sedimentation in China. Water Resources Journal, 186:92-95.

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18187. **Graham, W. J.; Yang, C. T. 1996.** Dam safety and nonstructural damage reduction measures. *Water International*, 21(3):138-143.  
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18188. **Gulliver, J. S.; Wilhelms, S. C. 1994.** Water quality enhancement technology for river-reservoir systems. In Cotroneo, G. V.; Rumer, R. R. (Eds.), *Hydraulic engineering '94*. Vol.2: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.1331-1340.  
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18205. **Stonestreet, R. J.; Stonestreet, S. E. 1994.** Determination of sediment profile for a dry flood control basin. In Cotroneo, G. V.; Rumer, R. R. (Eds.), *Hydraulic engineering '94*. Vol.2: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.1004-1008.  
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### 630 Agriculture

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18286. Abrol, Y. P.; Gadgil, S.; Pant, G. B. (Eds.) 1996. Climate variability and agriculture. New Delhi, India: Narosa Publishing House. viii, 410p.

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18287. Australia. State Rivers and Water Supply Commission. Learning to live with drought: Student book - one. Australia: Australia. Soil Conservation Authority. 42p.

*Drought / Australia*

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18288. Australia. State Rivers and Water Supply Commission. Learning to live with drought: Student book - two. Australia: Australia. Soil Conservation Authority. 52p.

*Drought / Australia*

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### 630.25745 Agroecology

18289. UNDP. 1995. Agroecology: Creating the synergisms for a sustainable agriculture. New York, NY, USA: UNDP. vii, 87p. (UNDP guidebook series)

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18290. Baile, P. 1996. Farmer-to-farmer extension: Pedro Baile's experience. In Scarborough, V. (Ed.), Farmer-led approaches to extension: Papers presented at a Workshop in the Philippines, July 1995. London, UK: ODI. pp.45-48. (ODI Agricultural Research & Extension network paper 59a)

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18291. Bhuiyan, N.; Walker, M. 1996. The problem census: Participatory public sector extension in Bangladesh. In Scarborough, V. (Ed.), Farmer-led approaches to extension: Papers presented at a Workshop in the Philippines, July 1995. London, UK: ODI. pp.24-28. (ODI Agricultural Research & Extension network paper 59c)

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18292. Bimoli, B. P.; Manandhar, D. N. 1996. A farmer-centred extension approach in Nepal. In Scarborough, V. (Ed.), Farmer-led approaches to extension: Papers pre-

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*Agricultural extension / Farmer participation / Nepal*

(Location: HQ Call No: ODI/96/59C Record No: H 18200)

18293. **Bunch, R. 1996.** People-centred agricultural development: Principles of extension for achieving long-term impact. In Scarborough, V. (Ed.), Farmer-led approaches to extension: Papers presented at a Workshop in the Philippines, July 1995. London, UK: ODI. pp.11-18. (ODI Agricultural Research & Extension network paper 59a)

*Agricultural development / Agricultural extension / Sustainability*

(Location: HQ Call No: ODI/96/59A Record No: H 18192)

18294. **Chowdhury, M. K.; Gilbert, E. H. 1996.** Reforming agricultural extension in Bangladesh: Blending greater participation and sustainability with institutional strengthening. London, UK: ODI. viii, 42p. (ODI Agricultural Research & Extension network paper no.61)

*Agricultural extension / Farmer participation / Non-governmental organizations / Farm size / Agricultural research / Irrigation equipment / Training / Public sector / Sustainability / Bangladesh*

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18295. **Farouk, A.; Worsley, S. 1996.** The CAREA-Egypt Farmlink Project. In Scarborough, V. (Ed.), Farmer-led approaches to extension: Papers presented at a Workshop in the Philippines, July 1995. London, UK: ODI. pp.29-33. (ODI Agricultural Research & Extension network paper 59c)

*Agricultural extension / Farmer participation / Development projects / Egypt / Fayoum*

(Location: HQ Call No: ODI/96/59C Record No: H 18202)

18296. **Gabino Lopez, V. 1996.** The villager extensionist in developing nations. In Scarborough, V. (Ed.), Farmer-led approaches to extension: Papers presented at a Workshop in the Philippines, July 1995. London, UK: ODI. pp.36-44. (ODI Agricultural Research & Extension network paper 59a)

*Agricultural extension / Farmer participation / Villages*

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18297. **Hai, N. 1996.** CIDSE's working experiences in farmer-based extension approaches in Vietnam. In Scarborough, V. (Ed.), Farmer-led approaches to extension:

Papers presented at a Workshop in the Philippines, July 1995. London, UK: ODI. pp.12-19. (ODI Agricultural Research & Extension network paper 59c)

*Agricultural extension / Farmer participation / Forest resources / Vietnam / Thailand*

(Location: HQ Call No: ODI/96/59C Record No: H 18199)

18298. **Kingsley, M. A.; Musante, P. 1996.** Activities for developing linkages and cooperative exchange among farmers' organisations, NGOs, GOs and researchers: Case study of an NGO-Coordinated integrated pest management project in Indonesia. In Scarborough, V. (Ed.), Farmer-led approaches to extension: Papers presented at a Workshop in the Philippines, July 1995. London, UK: ODI. pp.5-13. (ODI Agricultural Research & Extension network paper 59b)

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*Subsurface drainage / Water table / Mathematical models*

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### 631.7 IRRIGATION MANAGEMENT

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(Location: HQ Call No: PER Record No: H 18813)

**Abstract:** A statewide survey was conducted during 1992 to determine which methods growers used to irrigate their crops in 1991. A questionnaire was distributed to 10,000 of the estimated 80,000 growers in California. Respondents represent nearly 6% of the total 1991 irrigated crop land in California. A comparison with studies done during 1972 and 1980 showed that the amount of land irrigated by surface methods has declined, while the amount of land irrigated by sprinkler and drip methods has increased. The area planted to field crops has declined, while that planted to permanent crops such as fruit and nut trees and grapevines has increased. A rapid increase in the use of drip irrigation in vineyards is the most significant change.

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*Irrigation / History / Sociological analysis / Egypt / Nile River / Fayum*

(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19597)

18506. **Thompson, D. J. 1996.** Irrigation and agricultural take-off in 19th century Germany - A model for developing countries? In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1G: History Seminar - 6th seminar on history of irrigation, drainage and flood control with special reference to Egypt - R.17. New Delhi, India: ICID. pp.329-338.

*Irrigated farming / History / Irrigation programs / Farmers' attitudes / Irrigation practices / Drainage / Conflict / Germany*

(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19606)

18507. **US. Department of Agriculture. 1965.** Proceedings seepage symposium. Proceedings of Seepage Symposium, Phoenix, Arizona, February 19-21, 1963. 180p.

*Management / Irrigation water / Seepage loss / Soils / Water table / Canals / Water quality / Canal linings / USA*

(Location: PAK Call No: 631.7 G430 USD Record No: PK 2656)

18508. **US. Department of the Interior, Bureau of Reclamation; Bureau of Indian Affairs.** Report on the water conservation opportunities study. Washington, WA, USA: US. Department of the Interior. xx, 67p. + appendices.

*Water conservation / Water distribution / Water use efficiency / Environmental effects / Social impact / Legal aspects / Institutional constraints / USA*

(Location: PAK Call No: 631.7 G430 USD Record No: PK 2681)

18509. **WAPDA. 1989.** PC-I proforma: Lower Indus water management and reclamation research project 1989-93. Unpublished report. 70p.

*Projects / Water management / Research / Policy / Financing / Salinity control / Waterlogging / Land reclamation / Tube wells / Canals / Irrigation scheduling / Water table / Pakistan / Lower Indus*

(Location: PAK Call No: 631.7 G730 WAP Record No: PK 2382)

18510. **WAPDA. 1986.** Proceedings of the first International Irrigation Conference held from 4-8 January 1986. Conference proceedings. v, 280p.

*Irrigation / Soils / Water resources / Salinity / Food production / Mountains / Irrigation systems / Drainage / Water table / Subsurface drainage / Pollution / Water budget / Water requirements / Water use efficiency / Crop production / Pakistan / Africa / Jordan*

(Location: PAK Call No: 631.7 G000 WAP Record No: PK 2684)

18511. **Yadav, J. S. P. 1995.** Some unsustainability issues of irrigated agriculture. In Indian Society of Water Management, National Symposium on Managing Water Resources for Sustainable Agriculture and Environment, Gujarat Agricultural University, Gujarat, India, October 5-7, 1995: Souvenir. pp.17-20.

*Irrigation efficiency / Irrigation management / Water resource management / Water policy / Water quality / Sustainable agriculture / Irrigated farming India*

(Location: HQ Call No: P 4193 Record No: H 17970)

18512. **Zia, B. A. 1992.** Bibliographic review of Irrigation Systems Management Research (ISM/R) Project. Report compiled by NADLIN office at Lahore. iii, 137p. + appendix.

*Bibliographies / Irrigation systems / Management / Canals / Cost benefit analysis / Crop production / Crop yield / Intensive cropping / Design criteria / Distributary canals / Drainage / Evaluation / Evapotranspiration / Fertilizers / Flood irrigation / Furrow irrigation / Geology / Groundwater / Irrigation practices / Irrigation scheduling / Land use / Tube wells / Pakistan*

(Location: PAK Call No: 631.7 G730 ZIA Record No: PK 1631)

### 631.7088042 Women in irrigation

18513. **Basnet, K. 1992.** Beyond the chadar and chardiwari: Women in the irrigated areas of Punjab. A draft research paper by IIMI. 30p.

*Women / Irrigated farming / Gender differences / Female labor / Irrigation Livestock / Woman's status / Crop production / Salinity / Waterlogging / Decision making / Pakistan / Punjab*

(Location: PAK Call No: IIMI 631.7088042 G730 BAS Record No: PK 1525)

18514. **Zwarteveen, M.; Neupane, N. 1995.** Gender aspects of irrigation management: The Chhattis Mauja Irrigation System in Nepal. Asia-Pacific Journal of Rural Development, 5(1):1-26.

*Gender / Irrigation management / Woman's status / Farmer participation / Female labor / Households / Water allocation / Nepal*

(Location: HQ Call No: PER. IIMI 631.7088042 G726 ZWA Record No: H 17812)

**Abstract:** Although irrigated farming in the head end of the Chhattis Mauja irrigation system in Nepal is increasingly the responsibility of women, female farmers do not formally participate in the schemes' organization. However, women's non-involvement as formal members in meetings, and the lack of female representation in the organization does not seem to negatively affect their access to irrigation services. On the contrary, women succeed extremely well in getting their irrigation needs accommodated. This is due partly to the very fact that they are not formally participating in the scheme's management; this allows them to take more water than they are entitled to and to contribute less labor to maintenance than they should without being punished. Because women are not recognized as members, the organization faces difficulties in enforcing its rules on women. At the same time, female farmers cunningly make use of the prevailing gender ideology which pictures them as weak and in need of protection. This ideology, although it does not reflect realities as perceived by women themselves, does strengthen them in their negotiations for more water and in their attempts to minimize their contributions to the schemes' maintenance.

18515. **Zwarteveen, M. 1995.** Linking women to the main canal: Gender and irrigation management. London, UK: IIED. 18p. (Getekeeper series no.54)

*Gender / Women in development / Irrigation management / Irrigation canals / Privatization / Water users' associations / Gambia / Sri Lanka*

(Location: HQ, ODI Call No: P 4144 Record No: H 17752)

18516. **Zwarteveen, M. Z.; Endevel, M. 1995.** Rural women's questions are agrarian questions: A discussion of the Intellectual and Political Construction of Realities of Rural Women. Paper presented at the Conference "Agrarian Questions: The Politics of Farming anno 1995", Wageningen, The Netherlands, 22-24 May 1995. 11p.

*Agrarian reform / Rural women / Farming / Gender*

(Location: HQ Call No: IIMI 631.7088042 G000 ZWA Record No: H 18423)

18517. **Zwarteveen, M. Z. 1995.** Water: From basic need to commodity: A discussion on gender and water rights in the context of irrigation. Paper prepared for GENDER-PROP, an International E-Mail Conference on Gender and Property Rights, May-December 1995. 39p.

*Water resources / Water rights / Gender / Irrigation management / Policy / Women*

(Location: HQ Call No: IIMI 631.7088042 G000 ZWA Record No: H 18425)

**Abstract:** GENDER-PROP is an EMail conference run by the organizers of GENDER-CG, an international EMail network for intrahousehold and gender aspects of food and agricultural research. The conference secretariat is located at IFPRI, supported by funding from CGIAR Gender Program.

**631.7.1 Physical and engineering aspects**

18518. **1996.** Cross regulators and main system management applications in the Beheira Area. Water Resources Strategic Research Activity Special study report, National Water Research Center. Ministry of Public Works and Water Resources, and USAID, Cairo, Egypt. 14p. + annexes. (WRSR publication series no.10)

*Irrigation canals / Flow control / Hydrology / Hydraulics / Design / Models / Egypt / Beheira Governorate / El-Mahmoudia Canal / El-Khandek El-Sharky canal*

(Location: HQ Call No: P 4366 Record No: H 19477)

18519. **1996.** Design of small irrigation schemes. Water, 2:6-7.

*Irrigation programs / Small scale systems / Irrigation design / Computer software / Performance evaluation / Africa / Zimbabwe / Kenya / Egypt / Tanzania*

(Location: HQ Call No: P 1751 Record No: H 18623)

18520. **1995.** Electrokinetic surveying for groundwater. ODA Water, 1:8.

*Groundwater potential / Surveying / Measuring instruments / Water table / Egypt / Zimbabwe*

(Location: HQ Call No: P 4152 Record No: H 17844)

18521. **1995.** Irrigation Operations and Maintenance Action Program: Background information and tentative plans El Wasta District. Draft report. 10p.

*Irrigation management / Irrigation canals / Flow control / Decision making Water budget / Maintenance / Egypt*

(Location: HQ Call No: P 4200 Record No: H 18238)

18522. **1996.** Mahmoudia Canal Improvement Project. Water Resources Strategic Research Activity Special study report, National Water Research Center. Ministry of Public Works and Water Resources, and USAID, Cairo, Egypt. 88p. (WRSR publication series no.6)

*Irrigation canals / Irrigation programs / Development projects / Water requirements / Drainage / Water delivery / Soil properties / Water supply / Crop yield / Evapotranspiration / Water balance / Egypt / Beheira Governorate / Mahmoudia Canal*

(Location: HQ Call No: P 4362 Record No: H 19473)

18523. **1995.** Microirrigation: A compilation of published articles from applied engineering in agriculture and transactions of the ASAE, 1985-1994. St. Joseph, MI, USA: ASAE. 1103p.

*Irrigation engineering / Small scale systems*  
(Location: ICID Record No: 26994)

18524. **1996.** Preventing plugging. Far Eastern Agriculture, May/June:29-30.

*Water distribution / Irrigation practices / Irrigation systems / Small scale systems / Pipes / Maintenance*

(Location: HQ Call No: P 4314 Record No: H 19037)

18525. **1995.** Tracking center pivot systems. Irrigation Journal, 45(6):10.

*Irrigation equipment / Irrigation systems / Irrigation efficiency / Technology / USA*

(Location: HQ Call No: PER Record No: H 17770)

18526. **Abdel-Azim, R.; Ekassar, G.; Amer, K.; Hamed, M. 1995.** Field visit to Minya Directorate, West Abou Korkas Irrigation District (during 24, 25 July and 19 to 22 August 1995) Second draft report. 21p.

*Irrigation management / Irrigation canals / Flow control / Decision making Water budget / Maintenance / Water demand / Egypt / ElMinya / Aboukoras*

(Location: HQ Call No: P 4201 Record No: H 18239)

18527. **Abdel-Azim, R.; Elkassar, G.; Amer, K.; Bekheet, K. 1995.** Field visit to Salhia Directorate, Abou Hammad Irrigation District, period from 17 to 21 September 1995 and day 26, 27 October 1995. Second draft report. 17p.

*Irrigation management / Irrigation canals / Flow control / Decision making Water budget / Maintenance / Water demand / Egypt*

(Location: HQ Call No: P 4202 Record No: H 18240)

18528. **Abdel-Azim, R.; Ekassar, G.; Amer, K.; Hamed, M. 1995.** Report on field visit to Beni Suef Directorate Wasta Irrigation District, during 4, 5, 23, 24 July and 23, 24 August 1995. Second draft report. 15p.

*Irrigation canals / Flow control / Decision making / Water budget / Maintenance/ Egypt / Wasta District / Nile River*

(Location: HQ Call No: P 4161 Record No: H 17872)

18529. **Abu Rizaiza, O. S.; Al-Osaimy, M. H. 1996.** A statistical approach for estimating irrigation water usage in western Saudi Arabia. *Agricultural Water Management*, 29(2):175-185.

*Irrigation water / Water requirements / Models / Water management / Water use / Leaching / Statistical analysis / Evapotranspiration / Crop production / Saudi Arabia*

(Location: HQ Call No: PER Record No: H 17790)

18530. **Agodzo, S. K.; Gowing, J. W.; Adey, M. A. 1995.** Modelling a finite cylindrical trickle source with cylindrical root uptake. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.621-627.

*Drip irrigation / Soil water / Mathematical models / Pitcher irrigation / Soil-water-plant relationships*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18915)

18531. **Ahmad, M.; Jamieson, J.; Asif, S.; Strosser, P. 1996.** Use of satellite imagery for land use mapping and crop identification in irrigation systems in Pakistan. Paper presented at the Asian Conference on Remote Sensing, Colombo, Sri Lanka, 4-8 November 1996. 9p.

*Satellite surveys / Land use / Mapping / Crops / Irrigation systems / Pakistan / Punjab / Chishtian Sub-Division / Fordwah*

(Location: HQ Call No: IIMI 631.7.1 G730 AHM Record No: H 19417)

18532. **Ahmad, S.; Aslam, M.; Shafiq, M. 1996.** Reducing water seepage from earthen ponds. *Agricultural Water Management*, 30(1):69-76.

*Seepage / Water loss / Arid lands / Farm ponds / Water harvesting / Pakistan*

(Location: HQ Call No: PER Record No: H 18460)

18533. **Ahmed, M.; Sharma, M. L.; Richards, Q. D.; Ahmad, A. R. 1996.** Field-scale nitrogen leaching: Application of model "LEACHN" In Aminuddin, B. Y.; Sharma, M. L.; Willett, I. R. (Eds.), *Agricultural impacts on groundwater quality: Proceedings of an international workshop held in Kota Bharu, Kelantan, Malaysia, 24-27 October 1994*. Canberra, Australia: ACIAR. pp.45-52.

*Mathematical models / Leaching / Nitrogen / Simulation / Soil water / Calibrations / Sensitivity*

*analysis / Fertilizers / Drainage / Tobacco / Australia / Malaysia / Perth / Kelantan Plain*

(Location: HQ Call No: 631.7.6.3 G000 AMI Record No: H 19057)

18534. **Al-Abed, N.; Whiteley, H. R. 1995.** Modelling water quality and quantity in the lower portion of the Grand River Watershed, Ontario. In Heatwole, C. (Ed.), *Water quality modeling: Proceedings of the International Symposium*, April 2-5, 1995, Hyatt Hotel Orlando, Orlando, Florida. St. Joseph, MI, USA: ASAE. pp.213-222.

*GIS / Hydrology / Simulation models / Calibrations / Irrigation water / Water quality / Watersheds / River basins / Canada / Ontario / Grand River*

(Location: HQ Call No: 333.91 G000 HEA Record No: H 18696)

18535. **Alekperov, C.; Barukhin, F.; Ben-Asher, J.; Ephrath, J. 1995.** A system of microirrigation for optimum fertilizing study in *Hippeastrum* spp. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.566-570.

*Drip irrigation / Fertilizers / Nitrogen / Plant growth / Crop production / Crop yield / Mathematical models / Irrigation design / Water management*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18906)

18536. **Ali, A.; Chaudhry, M. R. 1996.** Water conveyance and distribution at watercourse level. In Riaz, K.; Wahaj, R. (Ed.), *Tertiary sub-system management: Proceedings of one-day workshop held on June 18, 1995 in Lahore, Pakistan*. Lahore, Pakistan: IIMI Pakistan. pp.12-23.

*Water conveyance / Water distribution / Watercourses / Irrigation canals / Pakistan*

(Location: HQ Call No: IIMI 631.7.6.2 G730 RIA Record No: H 19407)

18537. **Amer, M. H. 1996.** History of land drainage in Egypt. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: *Sustainability of Irrigated Agriculture - Transactions, Vol.1G: History Seminar - 6th seminar on history of irrigation, drainage and flood control with special reference to Egypt - R.4*. New Delhi, India: ICID. pp.61-130.

*History / Drainage / Policy / Irrigated farming / Climate / Soils / Irrigation canals / Pumping / Rehabilitation / Subsurface drainage / Design criteria / Rice / Water reuse / Salinity / Simulation models / Mathematical models / Institutions / Water management / Environmental effects / Water pollution / Egypt / Nile River*

(Location: HQ Call No: ICID 631.7.1 G000 ICI  
Record No: H 19598)

18538. **Amin, M. S. M. 1995.** Reducing lateral head loss by hemispherical emitter barb protrusion. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.869-874.

*Irrigation equipment / Sprinkler irrigation / Design / Calibrations*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18955)

18539. **Anandacoomaraswamy, A. 1995.** Microirrigation effect on the growth and water use of tea. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.745-749.

*Irrigation effects / Small scale systems / Simulation models / Computer models / Evapotranspiration / Crop yield / Soil moisture / Sri Lanka*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18935)

18540. **Andrews, J. 1996.** Water for the forgotten people - Botswana's revolutionary well-jetting technology. *Waterlines*, 14(4):28-29, 31.

*Wells / Manual pumps / Water lifting / Irrigation equipment / Botswana / Okavango*

(Location: HQ Call No: PER Record No: H 18408)

18541. **Annandale, J. G.; Campbell, G. S. 1995.** Modeling the soil water balance under microirrigation. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.840-850.

*Soil water relations / Simulation models / Irrigation systems / Soil water movement*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18951)

18542. **Annandale, J. G.; Mulla, D. J. 1995.** Nitrate leaching losses from hills and furrows in irrigated potatoes. In Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings, March 5-8, 1995, Kansas City, Missouri. Volume II: Nutrients. St. Joseph, MI, USA: ASAE. pp.9-12.

*Irrigation water / Crop production / Potatoes / Nitrogen / Leaching / Computer models / Irrigation systems / Irrigation management /*

*Groundwater Water pollution / USA / Columbia Basin*

(Location: HQ Call No: 333.91 G000 CLE Record No: H 18767)

18543. **Asare, D. K.; Sammis, T. W.; Smeal, D.; Zhang, H. 1995.** Atrazine dynamics in a field irrigated soil. In Heatwole, C. (Ed.), Water quality modeling: Proceedings of the International Symposium, April 2-5, 1995, Hyatt Hotel Orlando, Orlando, Florida. St. Joseph, MI, USA: ASAE. pp.31-40.

*Irrigation water / Models / Water pollution / Simulation / Soil moisture / Soil properties / Pesticide residues / USA / New Mexico*

(Location: HQ Call No: 333.91 G000 HEA Record No: H 18692)

**Abstract:** A study was conducted to assess atrazine transport and distribution in a field soil in relation to four levels of early-season irrigation, with the overall objective of developing water management strategies to minimize the potential for atrazine pollution of water resources. The specific objective was to use the measured atrazine data to evaluate and compare the performance of two conceptually different contaminant transport models, IRRSCHM and LEACHP. The measured atrazine transport and distribution in soil profiles were directly related to levels of early-season and seasonal irrigation water. Generally, the measured and predicted atrazine data agreed within one order of magnitude, suggesting that both models gave reasonably good approximation of measured soil atrazine. IRRSCHM, a field-capacity and mixing-cell management oriented model, performed better than LEACHP, a classical deterministic model that uses Richard's and Convection-Dispersion Equations for simulating water and pesticide dynamics.

18544. **Asif, S.; Mobin-ud-Din Ahmad; Ali, C. K.; Strosser, P. 1996.** Use of Geographical Information System for the development of targeted reclamation programs to mitigate salinity in irrigated areas in Pakistan. Paper presented at the Asian Conference on Remote Sensing, Colombo, Sri Lanka, 4-8 November 1996. 11p.

*GIS / Land reclamation / Salinity / Irrigable land / Watercourses / Water allocation / Pakistan / Punjab / Fordwah*

(Location: HQ Call No: IIMI 631.7.1 G730 ASI Record No: H 19416)

18545. **Attia, B.; Andjelic, M.; Klohn, W. 1995.** River Nile monitoring, forecasting and simulation project. In FAO; CEMAGREF, Use of remote sensing techniques in irrigation and drainage: Proceedings of the Expert Consultation, Montpellier, France, 2-4 November 1993. Rome, Italy: FAO. pp.17-26.

*Remote sensing / Satellite surveys / Rain / Precipitation / River basin development / Water management / Development projects / Project planning / Monitoring / Forecasting / Information systems / Hydrology / Simulation models / Water balance / Reservoirs / Dams / Stream flow / Water conservation / GIS / Computer techniques / Computer software / Decision support tools / Egypt / Nile River*

(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18593)

18546. Augier, P.; Baudequin, D.; Isberie, C. 1995. Improving on-farm irrigation equipment efficiency to enable upgraded irrigation scheduling practices and to increase irrigation performance. In ICID; FAO, 46th International Executive Council, ICID/FAO Workshop on Irrigation Scheduling: From Theory to Practice, FAO, Rome, Italy, 12-13 September 1995 - Background papers. Rome, Italy: FAO. 11p.

*Irrigation equipment / Irrigation scheduling / Irrigation practices / Performance / Surface irrigation / Sprinkler irrigation / France*

(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 18150)

18547. Ayars, J. E. 1996. Managing irrigation and drainage systems in arid areas in the presence of shallow groundwater: Case studies. Irrigation and Drainage Systems, 10(3):227-244.

*Irrigation management / Subsurface drainage / Design / Groundwater management / Salinity / Arid zones / Irrigation scheduling / Subsurface irrigation / Drip irrigation / Case studies / Cotton / Tomatoes / Furrow irrigation / Evapotranspiration / USA / California / San Joaquin Valley*

(Location: HQ Call No: PER Record No: H 19174)

18548. Ayars, J. E. 1995. Managing plant water uptake from shallow saline groundwater. In Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings, March 5-8, 1995, Kansas City, Missouri. Volume III: Practices, systems and adoption. St. Joseph, MI, USA: ASAE. pp.13-16.

*Groundwater / Water quality / Drainage / Cotton / Irrigation scheduling / Tomatoes / Water table / Evapotranspiration*

(Location: HQ Call No: 333.91 G000 CLE Record No: H 18783)

18549. Babu, B. M.; Mishra, P. K.; Satyanarayana, T. 1996. Performance of baffle-sludge modules with changed module dimensions. Journal of Irrigation and Drainage Engineering, 122(5):310-313.

*Drains / Weirs / Open channels / Regulated flow / Performance / India*

(Location: HQ Call No: PER Record No: H 19238)

18550. Babu, S. C.; Nivas, B. T.; Traxler, G. J. 1996. Irrigation development and environmental degradation in developing countries - A dynamic model of investment decisions and policy options. Water Resources Management, 10(2):129-146.

*Irrigation management / Irrigation programs / Water management / Environmental degradation / Environmental effects / Developing countries / Conjunctive use / Mathematical models / Salinity / Private investment / Public investment / India / Pakistan / Indus River Basin*

(Location: HQ Call No: PER Record No: H 18493)

18551. Baig, M. A. 1996. A linear programming model for modifying cropping pattern in a saline and waterlogged area of Pakistan. In Ragab, R.; El-Quosy, D. E. D.; van den Broek, B.; Pereira, L. S. (Eds.), Crop-water-environment models: Selected papers to the workshop organized by the ICID Working Group on "Sustainable Crops and Water Use" at the occasion of the 16th Congress of the International Commission on Irrigation and Drainage at Cairo, Egypt. Cairo, Egypt: ICID. Egypt National Committee. pp.111-125.

*Linear programming / Mathematical models / Crop production / Waterlogging / Salinity / Water table / Conjunctive use / Pakistan*

(Location: HQ Call No: 631.7.1 G000 RAG Record No: H 19369)

18552. Balasubramamiam, C.; Somasundaram, M. V.; Pundarikanthan, N. V. 1996. LP analysis in a tank irrigation system for near real representation and optimal allocation of area. Irrigation and Drainage Systems, 10(2):143-158.

*Tank irrigation / Linear programming / Water allocation / Mathematical models / Rice / India / Tamil Nadu / Aralikottai*

(Location: HQ Call No: PER Record No: H 18669)

18553. Baldwin, J. A.; Harrison, K. A. 1996. Determining water use in peanut production. Irrigation Journal, 46(6):18-19, 21.

*Water use / Crop production / Water requirements / Water deficit / Irrigation scheduling / Water balance / Computer models / USA / Georgia*

(Location: HQ Call No: PER Record No: H 19463)

18554. Bar, I. 1995. Iron control system for drip irrigation. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation

Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.239-243.

*Drip irrigation / Filtration / Water quality / Control systems / USA / Australia / Zambia / Taiwan / Israel*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18853)

18555. **Barth, H. K. 1995.** Resource conservation and preservation through a new subsurface irrigation system. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.168-174.

*Subsurface irrigation / Water conservation / Drip irrigation / Pipes / Hungary / Egypt / Pakistan*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18842)

18556. **Bastiaanssen, W. G. M.; Soliman, K. E. D. M.; Mirabile, C.; Korani, M.; Gawad, S. A. 1996.** Data management related to the application of two crop-water-environment- models in Argentina and Egypt. In Ragab, R.; El-Quosy, D. E. D.; van den Broek, B.; Pereira, L. S. (Eds.), *Crop-water-environment models: Selected papers to the workshop organized by the ICID Working Group on "Sustainable Crops and Water Use" at the occasion of the 16th Congress of the International Commission on Irrigation and Drainage at Cairo, Egypt*. Cairo, Egypt: ICID. Egypt National Committee. pp.54-68.

*Simulation models / Irrigation effects / Drainage / Water table / Crop production / Soil water relations / Argentina / Egypt*

(Location: HQ Call No: 631.7.1 G000 RAG Record No: H 19365)

18557. **Batchelor, S. 1996.** Treadle pumps - The Cambodian experience. *Waterlines*, 14(4):19-22.

*Irrigation equipment / Manual pumps / Water lifting / Cambodia / Bangladesh*

(Location: HQ Call No: PER Record No: H 18407)

18558. **Belaud, G. 1996.** Modeling of sediment transport in irrigation canals of Pakistan: Examples of application: Definition of a simple simulation tool and test on two actual canals of Pakistan: Application to management strategies. Thesis submitted for the MSc degree in Genie Rural (Agricultural Engineering) from the Ecole Nationale du Genie Rural, des Eaux et Forets (ENGREF) in Montpellier, France (A report prepared in collaboration with IS-RIP, CEMAGREF, and IIMI) vi, 58p. + appendices. (IIMI-Pakistan report no.R-12)

*Irrigation canals / Hydraulics / Simulation models / Calibrations / Sensitivity analysis / Water management / Pakistan / Punjab / Chashma*

(Location: HQ Call No: IIMI 631.7.1 G730 BEL Record No: H 19541)

18559. **Bellostas, J. M. 1994.** Application of linear programming models to irrigation systems using the databases of SIMIS. In FAO, *Irrigation water delivery models: Proceedings of the FAO Expert Consultation, Rome, Italy*, 4-7 October 1993. Rome, Italy: FAO. pp.155-164.

*Linear programming / Irrigation systems / Computer models / Databases / Computer software*

(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18509)

18560. **Beltrao, J.; Da Silva, A. A.; Asher, J. B. 1996.** Modeling the effect of capillary water rise in corn yield in Portugal. *Irrigation and Drainage Systems*, 10(2):179-189.

*Simulation models / Maize / Crop yield / Water requirements / Irrigation effects / Soil-water-plant relationships / Groundwater / Water table / Portugal*

(Location: HQ Call No: PER Record No: H 18671)

18561. **Bhatnagar, P. R.; Srivastava, R. C.; Bhatnagar, V. K. 1996.** Management of runoff stored in small tanks for transplanted rice production in the mid-hills of North-west Himalaya. *Agricultural Water Management*, 30(1):107-118.

*Water management / Runoff / Tank irrigation / Rice / Crop production / Catchment areas / India / Himalayas*

(Location: HQ Call No: PER Record No: H 18463)

18562. **Bhutta, M. N. 1994.** Application of a hydraulic model for improving irrigation water distribution along a secondary canal in Pakistan. In FAO, *Irrigation water delivery models: Proceedings of the FAO Expert Consultation, Rome, Italy*, 4-7 October 1993. Rome, Italy: FAO. pp.173-186.

*Irrigation management / Water distribution / Computer models / Simulation models / Hydraulics / Pakistan / Punjab*

(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18511)

18563. **Bildirici, M.; Bildirici, I. O. 1996.** Historical irrigation in the Plain of Ereğli of Konya. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: *Sustainability of Irrigated Agriculture - Transactions, Vol.1G: History Seminar - 6th seminar on history of irrigation, drainage and flood control with special reference to Egypt - R.9*. New Delhi, India: ICID. pp.179-194.

*History / Irrigation canals / Water resources / Turkey / Konya Plain / Ereğli*

(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19602)

18564. **Bobba, A. G.; Singh, V. P.; Bengtsson, L. 1996.** Application of first-order and Monte Carlo analysis in watershed water quality models. *Water Resources Management*, 10(3):219-240.  
*Watersheds / Water quality / Mathematical models / Simulation models / Hydrology / Environmental effects*  
 (Location: HQ Call No: PER Record No: H 18804)
18565. **Bogacki, W.; Hoddinghaus, T. 1992.** Design of tube-well drainage and water management with the help of a large-scale groundwater model. In *Drainage and water table control: Proceedings of the Sixth International Drainage Symposium*, 13-15 December 1992, Nashville, Tennessee. St Joseph, MI, USA: ASAE. pp.62-69.  
*Simulation models / Groundwater management / Subsurface drainage / Salinity control / Tube wells / Design / Water management / Pakistan*  
 (Location: HQ Call No: 631.62 G000 DRA Record No: H 19152)
18566. **Boman, B. J.; Parsons, M. L. 1995.** Considerations for component selection in microsprinkler systems. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.701-707.  
*Sprinkler irrigation / Small scale systems / Irrigation equipment / Design criteria / Citrus fruits / USA / Florida*  
 (Location: HQ Call No: 631.7 G000 LAM Record No: H 18928)
18567. **Boman, B. J.; Parsons, M. L. 1995.** Intake screen plugging effects on microirrigation pump station performance. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.544-549.  
*Pumps / Maintenance / Efficiency / Aquatic weeds / Surface water / Sprinkler irrigation / Citrus fruits / Irrigation equipment / Irrigation engineering / Energy consumption / USA / Florida*  
 (Location: HQ Call No: 631.7 G000 LAM Record No: H 18902)
18568. **Bos, M. G.; Kselik, R. A. L. 1996.** CRIWAR 2.0: Simulating crop irrigation water requirements. In Ragab, R.; El-Quosy, D. E. D.; van den Broek, B.; Pereira, L. S. (Eds.), *Crop-water-environment models: Selected papers to the workshop organized by the ICID Working Group on "Sustainable Crops and Water Use" at the occasion of the 16th Congress of the International Commission on Irrigation and Drainage at Cairo, Egypt*. Cairo, Egypt: ICID. Egypt National Committee. pp.246-254.  
*Simulation models / Computer software / Irrigation water / Water requirements / Crop production / Evapotranspiration / Precipitation / Argentina / Tunuyan Irrigation Project*  
 (Location: HQ Call No: 631.7.1 G000 RAG Record No: H 19377)
18569. **Bowman, B. J. 1994.** Integrating project-wide water order scheduling with a canal operation model. In *FAO, Irrigation water delivery models: Proceedings of the FAO Expert Consultation, Rome, Italy, 4-7 October 1993*. Rome, Italy: FAO. pp.267-282.  
*Irrigation management / Water distribution / Computer software / Computer models / Optimization / Mathematical models / Linear programming / Flow control*  
 (Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18517)
18570. **Bralts, V. F.; Gerrish, P. J.; Yue, R. 1995.** An improved finite element model for the analysis of microirrigation systems. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.60-66.  
*Irrigation systems / Small scale systems / Computer software / Hydraulics / Analysis / Design / Models / Pipes*  
 (Location: HQ Call No: 631.7 G000 LAM Record No: H 18826)
18571. **Bralts, V. F.; Shayya, W. H.; Lei, T. 1995.** Irrigation scheduling of microirrigation systems using the SCS-scheduler. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.799-805.  
*Irrigation scheduling / Irrigation systems / Computer software / Soil water / Evapotranspiration / USA / Michigan*  
 (Location: HQ Call No: 631.7 G000 LAM Record No: H 18944)
18572. **Brandyk, T.; Hewelke, P.; Szatyłowicz, J. 1996.** Environmental aspects of subirrigation water management in lowland peat soils. In *ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1C, Q.47: R.3.06 Irrigation planning and management: Measures in harmony with the environment*. New Delhi, India: ICID. pp.261-270.  
*Subsurface irrigation / Environmental effects / Water management / Soil properties / Soil water / Simulation / Mathematical models / Poland*

(*Location:* HQ *Call No:* ICID 631.7 G000 ICI  
*Record No:* H 19565)

18573. **Bravo, R.; Rogers, J. R.; Cleveland, T. G. 1996.** Modeling ground water flow using flux boundary conditions. *Water Resources Bulletin*, 32(1):39-46.

*Groundwater / Models / Hydrology / Aquifers / USA*

(*Location:* HQ *Call No:* PER *Record No:* H 18365)

18574. **Broner, I.; Comstock, S. 1996.** Crop management decision support systems to conserve water and reduce groundwater contamination. In *ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1C, Q.47: R.3.08 Irrigation planning and management: Measures in harmony with the environment.* New Delhi, India: ICID. pp.285-295.

*Groundwater / Pollution control / Water conservation / Crop production / Decision support tools / Fertilizers / Models*

(*Location:* HQ *Call No:* ICID 631.7 G000 ICI  
*Record No:* H 19567)

18575. **Broner, I. 1995.** Crop management systems to reduce groundwater contamination. In *Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings, March 5-8, 1995, Kansas City, Missouri. Volume III: Practices, systems and adoption.* St. Joseph, MI, USA: ASAE. pp.41-44.

*Groundwater / Water quality / Irrigated farming / Crop production / Barley Decision support tools / Models / USA / Colorado*

(*Location:* HQ *Call No:* 333.91 G000 CLE  
*Record No:* H 18784)

18576. **Buchleiter, G. W.; Heermann, D. F.; Duke, H. R. 1995.** Automation of variable irrigation water and chemical applications. In *Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings, March 5-8, 1995, Kansas City, Missouri. Volume III: Practices, systems and adoption.* St. Joseph, MI, USA: ASAE. pp.49-52.

*Irrigation water / Sprinkler irrigation / Nitrogen / Fertilizers / Automation / USA*

(*Location:* HQ *Call No:* 333.91 G000 CLE  
*Record No:* H 18785)

18577. **Buchleiter, G. W.; Farahani, H. J.; Ahuja, L. R. 1995.** Model evaluation of groundwater contamination under center pivot irrigated corn in Eastern Colorado. In *Heatwole, C. (Ed.), Water quality modeling: Proceedings of the International Symposium, April 2-5, 1995, Hyatt Hotel Orlando, Orlando, Florida.* St. Joseph, MI, USA: ASAE. pp.41-50.

*Groundwater / Water pollution / Evaluation / Simulation models / Sprinkler irrigation / Maize / Evapotranspiration / Nitrogen / Leaching / Percolation / USA / Colorado*

(*Location:* HQ *Call No:* 333.91 G000 HEA  
*Record No:* H 18693)

**Abstract:** The USDA/ARS Root-Zone-Water-Quality-Model (RZWQM) is a multi-modular physically-based model that simulates the many processes in the soil-crop-atmosphere continuum on a daily basis. The study evaluates the potential of the RZWQM to simulate a typical center pivot irrigated corn production system in Eastern Colorado. At the evaluation site, the coarse textured soils having low water holding capacities, require frequent irrigation which increases the potential for deep percolation of water and solutes below the root zone. Minimizing deep percolation of irrigation water increases nitrogen use efficiency and decreases water quality degradation from nitrates. Predicted values were compared with measured values for one growing season to parameterize the model. In the following year, deviations of the parameterized model's predictions from independently measured values for the 7 performance criteria ranged from 5-22%, indicating acceptable model performance.

18578. **Bui, W. 1995.** Experience with fiberglass filters in Hawaii's sugar industry. In *Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995.* St. Joseph, MI, USA: ASAE. pp.592-596.

*Drip irrigation / Sugarcane / Runoff water / Waste waters / Filtration / USA / Hawaii*

(*Location:* HQ *Call No:* 631.7 G000 LAM *Record No:* H 18910)

18579. **Burt, C. M.; Styles, S. W. 1996.** Sizing of header and flushing manifolds for row crop drip. *Irrigation Journal*, 46(4):24-27.

*Drip irrigation / Irrigation equipment / Design*

(*Location:* HQ *Call No:* PER *Record No:* H 19124)

18580. **Burt, C. M.; Plusquellec, H. L. 1990.** Water delivery control. In *Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), Management of farm irrigation systems.* St. Joseph, MI, USA: ASAE. pp.374-423.

*Water delivery / Control methods / Irrigation scheduling / Canal regulation techniques / Downstream control / Computer techniques / Pipes / Weirs / Irrigation design*

(*Location:* HQ *Call No:* 631.7.8 G000 HOF  
*Record No:* H 18313)

18581. **Buske, U. 1996.** Technology transfer in water management - even in antiquity. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1G: History Seminar - 6th seminar on history of irrigation, drainage and flood control with special reference to Egypt - R.5. New Delhi, India: ICID. pp.131-139.

*Technology transfer / Water management / History / Egypt / Euphratis / Tigris / Nile / Indus river*  
(Location: HQ Call No: ICID 631.7.1 G000 ICI  
Record No: H 19599)

18582. **Cabezut-Boo, O.; Anza, R.; Tubilla, L. 1994.** An attempt of an aquifer model with lack of data. In Cotroneo, G. V.; Rumer, R. R. (Eds.), Hydraulic engineering '94. Vol.1: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.312-316.

*Groundwater / Aquifers / Models / Wells / Mexico / Puebla*  
(Location: HQ Call No: 627 G000 COT Record  
No: H 19291)

18583. **Cabidoche, Y. M.; Ozier-Lafontaine, H. 1995.** THERESA: I. Matric water content measurements through thickness variations in vertisols. *Agricultural Water Management*, 28(2):133-147.

*Vertisols / Soil water / Soil moisture / Water measurement / Models*  
(Location: HQ Call No: PER Record No: H 17718)

18584. **Cameira, M. R.; Sousa, P. L.; Farahani, H. J.; Ahuja, L. R.; Pereira, L. S. 1996.** Simulation of water and nitrates in level basin fertigated maize using RZWQM. In Ragab, R.; El-Quosy, D. E. D.; van den Broek, B.; Pereira, L. S. (Eds.), Crop-water-environment models: Selected papers to the workshop organized by the ICID Working Group on "Sustainable Crops and Water Use" at the occasion of the 16th Congress of the International Commission on Irrigation and Drainage at Cairo, Egypt. Cairo, Egypt: ICID. Egypt National Committee. pp.42-53.

*Water quality / Simulation models / Nitrogen / Fertilizers / Maize / Basin irrigation / Soil moisture / Portugal / Sorraia River*  
(Location: HQ Call No: 631.7.1 G000 RAG  
Record No: H 19364)

**Abstract:** This study concerns the evaluation of the ability of Root Zone Water Quality Model (RZWQM) to simulate the seasonal water and nitrate movement in a level basin irrigated corn field under three different fertilizer treatments by comparing simulated and measured soil moisture and nitrate profiles for the growing season. The treatments were a single broadcast application of Urea, a single fertigation with UAN through the first irrigation, and multiple UAN fertigations

through all irrigations. First, the model was parameterized for maize using data from the single fertigation treatment. Evaluation runs, using the parameterized model, were conducted for the other two treatments. The model simulated water and nitrate transport well for the season, with the seasonal mean of measured and predicted values differing by less than 5%. Computer requirements: an 80386 or better CPU with math coprocessor; IBM PC-DOS or MS-DOS, Version 5.0 or later; at least 4 megabytes of RAM.

18585. **Caselles, V. 1995.** Farm irrigation management in La Mancha Region, Spain. In FAO; CEMAGREF, Use of remote sensing techniques in irrigation and drainage: Proceedings of the Expert Consultation, Montpellier, France, 2-4 November 1993. Rome, Italy: FAO. pp.115-122.

*Remote sensing / Satellite surveys / Evapotranspiration / Irrigated farming / Irrigation management / Models / Maize / Barley / Spain / La Mancha Region*  
(Location: HQ Call No: 631.7.1 G000 FAO  
Record No: H 18603)

18586. **Champion, D. W.; Suggs, S. 1995.** Irrigation automation conserves resources to meet demands of a changing world. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.228-233.

*Irrigation operation / Automation / Control systems / Computer techniques / Irrigation efficiency / Irrigation scheduling / Flow measurement*  
(Location: HQ Call No: 631.7 G000 LAM Record  
No: H 18851)

18587. **Chang, H. H.; Harrison, L. L.; Lee, W.; Tu, S. 1994.** Numerical modeling for sediment-pass-through operations of reservoirs. In Cotroneo, G. V.; Rumer, R. R. (Eds.), Hydraulic engineering '94. Vol.2: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.1014-1019.

*Reservoirs / Dams / Rivers / Sedimentation / Simulation / Computer models / USA / California / Rock Creek Reservoir / Cresta Reservoir*  
(Location: HQ Call No: 627 G000 COT Record  
No: H 19297)

18588. **Chatterjee, C.; Tiwari, K. N. 1995.** Finite element analysis of drip irrigation system. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.91-96.

*Drip irrigation / Analysis / Computer models / India / Kharagpur*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18831)

18589. **Chauhan, H. S.** 1995. Study approaches for trickle irrigation screen filters. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.597-602.

*Drip irrigation / Filtration / Irrigation equipment / Irrigation water / Water quality*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18911)

18590. **Chen, C. L.; Gomez, L. E.; Chen, C. W.; Wu, C. M.; Lin, J. J.; Cheng, I. L.** 1995. An integrated watershed management model with GIS and Windows application. In Heatwole, C. (Ed.), Water quality modeling: Proceedings of the International Symposium, April 2-5, 1995, Hyatt Hotel Orlando, Orlando, Florida. St. Joseph, MI, USA: ASAE. pp.242-250.

*Watershed management / Water quality / Simulation models / GIS / Taiwan*

(Location: HQ Call No: 333.91 G000 HEA Record No: H 18697)

18591. **Chengchun, K. E.; Singh, V. P.** 1996. Chinese experience on plastic membrane-concrete thin slab lining for canals. *Irrigation and Drainage Systems*, 10(1):77-94.

*Irrigation canals / Canal linings / Seepage / China*

(Location: HQ Call No: PER Record No: H 18184)

18592. **Chescheir, G. M.; Skaggs, R. W.; Gilliam, J. W.; Evans, R. O.** 1995. Effects of water table management on water quality. In Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings, March 5-8, 1995, Kansas City, Missouri. Volume III: Practices, systems and adoption. St. Joseph, MI, USA: ASAE. pp.61-64.

*Water table / Water quality / Water pollution / Pesticide residues / Subsurface drainage / Crop yield / Maize / Wheat / Soyabeans / Nitrogen / Fertilizers / Water management / Computer models / Simulation models / Irrigation water / USA / North Carolina*

(Location: HQ Call No: 333.91 G000 CLE Record No: H 18787)

18593. **Chescheir, G. M.; Murugaboopathi, C.; Skaggs, R. W.; Susanto, R. H.; Evans, R. O.** 1992. Modeling water table control systems with high head losses near the drain. In Drainage and water table control: Proceedings of the Sixth International Drainage Symposium, 13-15 De-

cember 1992, Nashville, Tennessee. St. Joseph, MI, USA: ASAE. pp.38-45.

*Mathematical models / Water table / Control systems / Drainage / Simulation / Subsurface irrigation / USA / North Carolina*

(Location: HQ Call No: 631.62 G000 DRA Record No: H 19150)

18594. **Chieng, S.; Visvanatha, N. A.** 1996. Design and performance of subsurface drainage in monsoonal irrigated areas. In Vincent, B. (Ed.), 16th ICID Congress: Sustainability of Irrigated Agriculture - Evaluation of the Performance of Subsurface Drainage Systems: Transactions of the Workshop, Cairo, Egypt, 15-22 September 1996. New Delhi, India: ICID. pp.193-202.

*Water management / Subsurface drainage / Design / Performance / Irrigable land / Waterlogging / Salinity control / Rain / India / Rajasthan*

(Location: HQ Call No: ICID 631.7.8 G000 VIN Record No: H 19509)

18595. **Chiew, F. H. S.; McMahon, T. A.; Dudding, M.; Brinkley, A. J.** 1995. Technical and economic evaluation of the conjunctive use of surface and groundwater in the Campaspe Valley, North-Central Victoria, Australia. *Water Resources Management*, 9(4):251-275.

*Conjunctive use / Surface water / Groundwater extraction / Pumping / Simulation models / Economic analysis / Australia / Victoria*

(Location: HQ Call No: PER Record No: H 17818)

18596. **Citeau, J. M.; Jourdan, R.** 1995. Planning and identification of irrigation potential. In FAO; CEMAGREF, Use of remote sensing techniques in irrigation and drainage: Proceedings of the Expert Consultation, Montpellier, France, 2-4 November 1993. Rome, Italy: FAO. pp.61-64.

*Remote sensing / GIS / Water potential / Mapping / Surveys / Development projects / Data collection / Computer software / Databases / Irrigation*

(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18598)

18597. **Clark, G. A.; Stanley, C. D.** 1995. Subirrigation using drip irrigation laterals. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.43-48.

*Drip irrigation / Subsurface irrigation / Irrigation design / Irrigation efficiency / Water table / Water conveyance / Drainage / USA / Florida*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18823)

18598. **Clarke, D.; El-Askari, K.; Smith, M. 1996.** CWR-VB: A user friendly software package for managing soil moisture. In Ragab, R.; El-Quosy, D. E. D.; van den Broek, B.; Pereira, L. S. (Eds.), Crop-water-environment models: Selected papers to the workshop organized by the ICID Working Group on "Sustainable Crops and Water Use" at the occasion of the 16th Congress of the International Commission on Irrigation and Drainage at Cairo, Egypt. Cairo, Egypt: ICID. Egypt National Committee. pp.235-245.

*Soil moisture / Models / Water requirements / Irrigation scheduling / Computer software*

(Location: HQ Call No: 631.7.1 G000 RAG Record No: H 19376)

**Abstract:** CWR-VB is a Windows computer package for calculating crop water requirements and irrigation scheduling by modelling soil moisture deficit. It employs the methodologies recommended by FAO. The Windows interface is used to provide a highly visual data input and output system with extensive error trapping. The program is able to use existing CROPWAT 5.7/CLIMWAT data files and is being further developed in collaboration with FAO to be fully compatible with the forthcoming CROPWAT version 7.0.

18599. **Combres, J. C.; Kamieniarz, C.; Maraux, F. 1996.** Pilotage de l'irrigation de la canne a sucre sous contraintes de reseau avec IRRICANNE. [Sugar cane irrigation management under constraints in reunion with IRRICANNE] In Ragab, R.; El-Quosy, D. E. D.; van den Broek, B.; Pereira, L. S. (Eds.), Crop-water-environment models: Selected papers to the workshop organized by the ICID Working Group on "Sustainable Crops and Water Use" at the occasion of the 16th Congress of the International Commission on Irrigation and Drainage at Cairo, Egypt. Cairo, Egypt: ICID. Egypt National Committee. pp.255-266.

*Sugarcane / Irrigation management / Water balance / Models / Computer software*

(Location: HQ Call No: 631.7.1 G000 RAG Record No: H 19378)

**Abstract:** Irrigation management through water balance is commonly based on the definition of the set of relations linking climate, soil and crop. On-farm, producers are facing numerous constraints, i.e. network characteristics, available equipment, climatic conditions variability, and particularly rainfall, planning of work and low-level of training. Derived from the water balance model applied to sugar cane, IRRICANNE (COMBRES and JACQUEMOND COLLE, 1990), a software taking into account part of these constraints and aiming at providing producers with an effective assistance is being developed. Apart from the water balance factor, the software includes a data base processing, a meteorological

data processing in real time, the flow characteristics, the expected rainfall, and in the end is able to forward a specific advice, in terms of water quantity, time and duration of application.

18600. **Comfort, S. D.; Inskeep, W. P.; Lockerman, R. H. 1993.** Observed and simulated transport of a conservative tracer under line-source irrigation. *Journal of Environmental Quality*, 22(3):554-561.

*Simulation models / Computer models / Soil water / Water quality / Water pollution / Sedimentary materials / Irrigation water / Monitoring / USA / Montana*

(Location: HQ Call No: P 4294 Record No: H 18980)

18601. **Corwin, D. L.; Rhoades, J. D.; Vaughan, P. J.; Lesch, S. M. 1995.** Salt-loading assessment methodology for managing soil salinity. In Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings, March 5-8, 1995, Kansas City, Missouri. Volume II: Nutrients. St. Joseph, MI, USA: ASAE. pp.35-38.

*Soil salinity / Groundwater / GIS / Irrigated soils / Simulation models / USA / California*

(Location: HQ Call No: 333.91 G000 CLE Record No: H 18769)

18602. **Coudert, J. M. 1995.** Use of satellite data in resources assessment by BRGM. In FAO; CEMAGREF, Use of remote sensing techniques in irrigation and drainage: Proceedings of the Expert Consultation, Montpellier, France, 2-4 November 1993. Rome, Italy: FAO. pp.31-38.

*Remote sensing / Satellite surveys / GIS / Recharge / Drainage / Catchment areas / Maps / Dams / Decision support tools / Water resource management / Energy / Hydroelectric schemes / Water potential / Bolivia / Tunisia / France / New Caledonia / Cochabamba / Beja / Languedoc-Roussillon / Vosges Hills*

(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18594)

18603. **Craddock, E. 1990.** The California Irrigation Management Information System (CIMIS) In Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), Management of farm irrigation systems. St. Joseph, MI, USA: ASAE. pp.931-941.

*Irrigation management / Management Information Systems / Computer software / Irrigation scheduling / Water conservation / USA / California*

(Location: HQ Call No: 631.7.8 G000 HOF Record No: H 18327)

18604. **Crescimanno, G.; Iovino, M. 1995.** Evaluating the effects of using saline-sodic solutions on the hydraulic characteristics of soil. In Heatwole, C. (Ed.), Water quality modeling: Proceedings of the International Symposium,

April 2-5, 1995, Hyatt Hotel Orlando, Orlando, Florida. St. Joseph, MI, USA: ASAE. pp.51-58.

*Salinity / Irrigation water / Soil properties / Hydrology / Simulation models / Sicily*

(Location: HQ Call No: 333.91 G000 HEA Record No: H 18694)

18605. **Crouch, D. P. 1996.** Water technology in New Spain. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1G: History Seminar - 6th seminar on history of irrigation, drainage and flood control with special reference to Egypt - R.14. New Delhi, India: ICID. pp.259-295.

*Water management / Technology / Irrigation water / Water supply / Water law / Water rights / History / Spain / USA / New Mexico / Texas / California / Santa Barbara / San Francisco*

(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19604)

18606. **Curtis, L.; Rochester, E. 1996.** Developing an adequate water supply with water harvesting. Irrigation Journal, 46(6):10-12.

*Water harvesting / Reservoirs / Design criteria / Pumping / Irrigated farming / Water resources / USA / Alabama*

(Location: HQ Call No: PER Record No: H 19461)

18607. **D'Urso, G.; Menenti, M.; Santini, A. 1995.** Remote sensing and simulation modeling for on-demand irrigation systems management. In ICID; FAO, 46th International Executive Council, ICID/FAO Workshop on Irrigation Scheduling: From Theory to Practice, FAO, Rome, Italy, 12-13 September 1995 - Background papers. Rome, Italy: FAO. 10p.

*Remote sensing / Mapping / Water requirements / Simulation models / Irrigation management / Water delivery*

(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 18157)

18608. **Dalvi, V. B.; Satpute, G. U.; Pawade, M. N.; Tiwari, K. N. 1995.** Growers' experiences and on-farm microirrigation efficiencies. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.775-780.

*Drip irrigation / Small scale systems / Irrigation efficiency / Performance evaluation / Crop yield / Constraints / Farmers' attitudes / India / Maharashtra*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18940)

18609. **Dandy, G. C.; Hassanli, A. M. 1996.** Optimum design and operation of multiple subunit drip irrigation systems. Journal of Irrigation and Drainage Engineering, 122(5):265-275.

*Drip irrigation / Irrigation design / Optimization / Mathematical models / Irrigation operation / Irrigation systems*

(Location: HQ Call No: PER Record No: H 19233)

18610. **De Jager, J.M.; Mottram, R. 1996.** Saving water by scheduling irrigation using weather data. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1E, Special session: The future of irrigation under increased demand from competitive uses of water and greater needs for food supply - R.9; Symposium: Management Information Systems in irrigation and drainage. New Delhi, India: ICID. pp.153-165.

*Irrigation scheduling / Water conservation / Computer techniques / Crop yield / Irrigation efficiency / Optimization / Southern Africa*

(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19580)

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*Decision support tools / Farm management / Water requirements / Cropping systems / Evapotranspiration / Infiltration / Crop yield / Water use / Simulation models / Optimization / Water deficit / Economic aspects / Spain*

(Location: HQ Call No: PER Record No: H 18578)

**Abstract:** A model has been developed to determine optimal irrigation strategies for a single season. This has been achieved by using a simple relation between yield and amount of irrigation water which takes into account the effect of uniformity of water application. The main objective of the model is to provide a procedure by which farms can evaluate and compare alternative assumptions on expected water regimes for the following year in order to optimize crop rotations, crop production and farm incomes and to attain the optimum use of irrigation works, farmland and other resources. The method requires data that are readily available to the farmer.

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*Computer models / Water management / Water distribution / Water policy / Groundwater / Surface water / Water quality / Decision support tools / Netherlands*

(Location: HQ Call No: 631.7.1 G000 RAG Record No: H 19380)

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*Drip irrigation / Pipes / Hydraulics*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18828)

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*Computer software / Computer techniques / Simulation models / Drip irrigation / Soil moisture / Pumping / Water balance / Citrus fruits*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18966)

18615. **Dembele, Y. 1995.** Modelisation de la gestion hydraulique d'une retenue d'irrigation: Application au périmètre rizicole de Mogtedo (Burkina Faso) [Modelling the hydraulic management of an irrigation reservoir: Application to the Mogtedo Rice Irrigation Scheme (Burkina Faso)] Unpublished Ph.D. thesis submitted to the L'Ecole Nationale Supérieure Agronomique de Rennes. viii, 156p.

*Reservoirs / Dams / Hydraulics / Irrigation programs / Simulation models / Rice / Evapotranspiration / Percolation / Water requirements / Runoff / Burkina Faso / Mogtedo*

(Location: HQ Call No: D 631.7.1 G226 DEM Record No: H 18422)

18616. **Demetracopoulos, A. C.; Hadjithodorou, C. 1996.** Seepage from surface canals by boundary element method. Journal of Irrigation and Drainage Engineering, 122(1):40-48.

*Seepage / Surface irrigation / Irrigation canals / Sensitivity analysis*

(Location: HQ Call No: PER Record No: H 17952)

18617. **Deumier, J. M. 1995.** Evolution des concepts concernant la maîtrise des systèmes irrigués. [Irrigation scheduling simulation models: Application by farmers] In ICID; FAO, 46th International Executive Council, ICID/FAO Workshop on Irrigation Scheduling: From Theory to Practice, FAO, Rome, Italy, 12-13 September 1995 - Background papers. Rome, Italy: FAO. 11p.

*Irrigation scheduling / Simulation models / Computer software / Cropping systems*

(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 18143)

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*Watersheds / Runoff / Precipitation / GIS / Rain / Sedimentation / Water pollution / Italy / USA / Alpone*

(Location: HQ Call No: 333.91 G000 HEA Record No: H 18698)

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*Water allocation / Water distribution / Water use / Irrigation programs / Irrigation practices / Irrigation engineering / Irrigated farming / Farmer participation / Water rights / Rehabilitation / Communal irrigation systems / India / Indonesia / Bolivia / Mexico / Portugal / Senegal*

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*Tube wells / Technology / Irrigation systems / India / Bihar / Saharsa / Purnea*

(Location: HQ Call No: P 4309 Record No: H 19032)

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*Watershed management / Water quality / Simulation models / GIS / USA / Michigan / Sycamore Creek*

(Location: HQ Call No: 333.91 G000 HEA Record No: H 18695)

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*Simulation models / Optimization / Irrigation scheduling / Water quality / Crop yield / Soil salinity / Leaching / Environmental effects / Drainage / Pollution control / USA*

(Location: HQ Call No: 333.91 G000 CLE Record No: H 18788)

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*Energy / Small scale systems / Irrigation equipment / Control systems / USA/Louisiana*

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*Irrigation efficiency / Irrigation canals / Water use / Water distribution / Water conveyance / Egypt*

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(Location: HQ Call No: 338.1 G000 JAP Record No: H 17993)

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*Irrigation management / History / Dams / Egypt / Sadd-el-Kafara / Fayoum*

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(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18592)

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*Simulation models / Soil moisture / Soil water relations / Nitrogen / Fertilizers / Seepage / Water balance / Plant growth / Maize / Irrigation water / Austria*  
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*Drip irrigation / Irrigation equipment / Water use efficiency / Irrigation efficiency / Crop production / USA / South Texas*  
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*Border irrigation / Infiltration / Field tests / Simulation*

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*Water table / Automation / Water quality / Monitoring / Subsurface drainage / Irrigation water / USA / Mississippi River valley*

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*Plant growth / Vegetables / Crop production / Evapotranspiration / Water use/ Irrigation requirements / Mathematical models / USA / California / Salinas Valley*

(Location: HQ Call No: PER Record No: H 19624)

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*Drip irrigation / Hydraulics / Tanks / Irrigation systems / Irrigation operation / Surge irrigation / Irrigation design / Bulgaria*

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*Watershed management / Water quality / Models / GIS / USA*

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*Irrigation equipment / Energy / Pumping / Irrigation engineering / Irrigation management / Irrigation efficiency / Economic aspects / USA*

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*Groundwater / Mathematical models / Simulation / Calibrations / Hydraulics Aquifers / Computer techniques / Case studies*

(Location: HQ Call No: PER Record No: H 18368)

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*Irrigation canals / Computer software / Open channels*

(Location: HQ Call No: PER Record No: H 17956)

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(Location: HQ Call No: PER Record No: H 17888)

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*Infiltration / Drip irrigation / Soil properties / Mathematical models*

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*Waste waters / Water reuse / Drip irrigation / Subsurface irrigation / Drip irrigation / Water reuse / USA / Hawaii*

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*Irrigation systems / Small scale systems / Performance evaluation / Water distribution / Irrigation efficiency / Crop production / USA / California*  
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*Drip irrigation / Subsurface irrigation / Furrow irrigation / Crop production / Irrigation equipment / Salinity / USA / California / Arizona*  
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(Location: HQ Call No: IIMI 631.7.1 G730 HAR Record No: H 19256)
18667. **Hassan, G. Z.; Bhutta, M. N. 1996.** A water balance model to estimate groundwater recharge in Rechna Doab, Pakistan. *Irrigation and Drainage Systems*, 10(4):297-317.  
*Groundwater / Reservoirs / Recharge / Water balance / Mathematical models / Water budget / Evapotranspiration / Pakistan / Rechna Doab*  
(Location: HQ Call No: PER Record No: H 19345)
18668. **Hatcho, N.; Sagardoy, J. A. 1996.** Optimum irrigation scheduling under Scheme Irrigation Management Information System (SIMIS) *Journal of Irrigation Engineering and Rural Planning*, 30:33-47.  
*Irrigation scheduling / Simulation / Optimization / Management Information Systems / Irrigation management / Computer software*  
(Location: HQ Call No: PER Record No: H 18335)
18669. **Hatcho, N.; Sagardoy, J. A. 1994.** Water distribution module of the SIMIS program. In FAO, *Irrigation water delivery models: Proceedings of the FAO Expert Consultation*, Rome, Italy, 4-7 October 1993. Rome, Italy: FAO. pp.63-78.  
*Water distribution / Computer software / Water requirements / Irrigation scheduling / Case studies / Rain / Simulation / Brazil*  
(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18504)
18670. **Hatfield, J. L.; Fuchs, M. 1990.** Evapotranspiration models. In Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), *Management of farm irrigation systems*. St. Joseph, MI, USA: ASAE. pp.33-59.  
*Evapotranspiration / Models / Remote sensing / Calibrations / Water loss / Climate / Measuring instruments / Soil water / Evaporation / Crop production*  
(Location: HQ Call No: 631.7.8 G000 HOF Record No: H 18305)

18671. **Heermann, D. F.; Wallender, W. W.; Bos, M. G. 1990.** Irrigation efficiency and uniformity. In Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), *Management of farm irrigation systems*. St. Joseph, MI, USA: ASAE. pp.125-149.

*Irrigation efficiency / River basins / Models / Water conveyance / Water loss / Seepage / Surface irrigation / Infiltration / Sprinkler irrigation / Irrigation systems / Small scale systems / Crop production*

(Location: HQ Call No: 631.7.8 G000 HOF Record No: H 18308)

18672. **Hession, W. C.; Storm, D. E.; Smolen, M. D.; Lakshminarayanan, R. 1995.** EUTROMOD and a GIS for watershed management and assessment. In Heatwole, C. (Ed.), *Water quality modeling: Proceedings of the International Symposium*, April 2-5, 1995, Hyatt Hotel Orlando, Orlando, Florida. St. Joseph, MI, USA: ASAE. pp.274-283.

*Watershed management / Assessment / Water quality / Water pollution / Simulation models / GIS / USA / Oklahoma / Wister Lake*

(Location: HQ Call No: 333.91 G000 HEA Record No: H 18699)

18673. **Hill, R. W.; Allen, R. G. 1996.** Simple irrigation scheduling calendars. *Journal of Irrigation and Drainage Engineering*, 122(2):107-111.

*Irrigation scheduling / Water management / Farmer participation / Crop yield / Soil water / Simulation models / Pakistan / USA*

(Location: HQ Call No: PER Record No: H 18279)

**Abstract:** Simple calendars are described that express best dates of irrigation based on long-term weather data. The calendars are intended to promote easy and ready adaption of improved water management practices by farmers in both developed and developing countries by presenting simplified, nontechnical scheduling guidance. The calendars are developed using a daily soil-water balance-crop yield model. Once developed, the calendars require no updating and no further input by technical personnel. Calendars are developed for several planting dates, soil types and initial water contents. Developed calendars graphically show recommended irrigation occurrences expressed in days or weeks after sowing that correspond with the type of irrigation water delivery schedule utilized. The calendars are generalized as much as possible to promote widespread public usability. The graphical nature of the calendars encourages use by illiterate or semiliterate farmers. The methodology demonstrated is transferable to any site where sufficient weather data are available.

18674. **Hills, D. J.; Tajrishy, M. 1995.** Treatment requirements of secondary effluent for microirrigation. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.887-892.

*Effluents / Waste waters / Filtration / Water reuse / Irrigation equipment / Design / Small scale systems*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18958)

18675. **Holly, F. M.; Parrish, J. P. 1994.** Expert analysis in regulated irrigation canal modelling. In Cotroneo, G. V.; Rumer, R. R. (Eds.), *Hydraulic engineering '94. Vol.1: Proceedings of the 1994 Conference*, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.92-96.

*Irrigation canals / Flow control / Simulation / USA / California*

(Location: HQ Call No: 627 G000 COT Record No: H 19280)

**Abstract:** Application of riverine unsteady-flow numerical modelling techniques to problems of flow regulation in irrigation canals invokes the need for careful treatment of some situations not commonly found in river modelling. To the extent that expert modelling experience can be formalized, the user of a canal modelling system can be alerted to untenable topographic, topological, and hydraulic situations; warned of impending hydraulic, computational, and numerical anomalies before they occur; and be guided to the causative source of anomalies after they occur. The paper describes implementation of accumulated expert experience in the CanalCAD irrigation-canal simulation system recently developed for the Imperial Irrigation District in California.

18676. **Hoogenboom, E. M.; Abdel Ghany, M.; Tahun, A. 1996.** Determination of q-h relations of field drains under Egyptian conditions. In Vincent, B. (Ed.), *16th ICID Congress: Sustainability of Irrigated Agriculture - Evaluation of the Performance of Subsurface Drainage Systems: Transactions of the Workshop*, Cairo, Egypt, 15-22 September 1996. New Delhi, India: ICID. pp.95-104.

*Drains / Drainage / Irrigation water / Recharge / Egypt*

(Location: HQ Call No: ICID 631.7.8 G000 VIN Record No: H 19504)

18677. **Hoogendam, P.; van den Dries, A.; Portela, J.; Stam, M.; Carvalho, J. 1996.** From allocation to distribution: Operational rules in a communal irrigation system in Northern Portugal. In Diemer, G.; Huibers, F. P. (Eds.), *Crops, people and irrigation: Water allocation practices of*

farmers and engineers. London, UK: Intermediate Technology Publications. pp.101-115.

*Water allocation / Water distribution / Irrigation systems / Irrigation operation / Communal irrigation systems / Water rights / Villages / Households / Water use / Portugal / Tras-os-Montes / Vila Cova*

(Location: HQ Call No: 631.7.1 G000 DIE Record No: H 3921)

18678. **Horst, L. 1995.** The discrepancy between irrigation scheduling and actual water distribution. In ICID; FAO, 46th International Executive Council, ICID/FAO Workshop on Irrigation Scheduling: From Theory to Practice, FAO, Rome, Italy, 12-13 September 1995 - Background papers. Rome, Italy: FAO. 12p.

*Irrigation scheduling / Water distribution / Irrigation design / Rice*

(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 18158)

18679. **Horst, L. 1996.** Intervention in irrigation water division in Bali, Indonesia: A case of farmers' circumvention of modern technology. In Diemer, G.; Huibers, F. P. (Eds.), Crops, people and irrigation: Water allocation practices of farmers and engineers. London, UK: Intermediate Technology Publications. pp.34-52.

*Water distribution / Water allocation / Irrigation programs / Farmers' attitudes / Technology / Water users' associations / Indonesia / Bali*

(Location: HQ Call No: 631.7.1 G000 DIE Record No: H 1808)

18680. **Horst, L. 1996.** Irrigation water division technology in Indonesia: A case of ambivalent development. Wageningen, Netherlands: Wageningen Agricultural University. Department of Irrigation and Soil and Water Conservation; ILRI. 41p. (Liquid gold special reports no.2)

*Irrigation practices / Technology / Hydraulics / Water distribution / Weirs / Design / Case studies / Indonesia*

(Location: HQ Call No: 631.7.1 G662 HOR Record No: H 19612)

18681. **Hsu, N. S.; Horng, M. J.; Wu, C. M.; Yeh, W. W. G.; Kuo, J. T. 1994.** Development of transport model for groundwater planning and management in Taipei Basin. In Cotroneo, G. V.; Rumer, R. R. (Eds.), Hydraulic engineering '94. Vol.1: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.332-335.

*Groundwater management / Mathematical models / Water quality / Aquifers / Taiwan / Taipei Basin*

(Location: HQ Call No: 627 G000 COT Record No: H 19293)

18682. **Hudak, P. F. 1996.** A heuristic for piping residential sprinklers. Irrigation and Drainage Systems, 10(4):343-353.

*Sprinkler irrigation / Pipes / Irrigation equipment*  
(Location: HQ Call No: PER Record No: H 19348)

18683. **Hung, J. Y. T. 1995.** Determination of emitter spacing and irrigation run time including plant root depth. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.292-296.

*Drip irrigation / Soil texture / Soil moisture / Sandy soils / Clay soils / Percolation / USA*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18862)

18684. **Hung, J. Y. T.; Krinik, A. C. 1995.** Maximum run time for sprinkling irrigation. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.288-291.

*Sprinkler irrigation / Soil texture / Infiltration / Irrigation requirements*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18861)

18685. **Hutmacher, B.; Mead, R.; Shouse, P. 1996.** Subsurface drip: Improving alfalfa irrigation in the west. Irrigation Journal, 46(1):48, 51-52.

*Subsurface irrigation / Drip irrigation / Crop-based irrigation / Soil salinity / Furrow irrigation / USA / California*

(Location: HQ Call No: PER Record No: H 18180)

18686. **ICID. 1996.** 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1E, Special session: The future of irrigation under increased demand from competitive uses of water and greater needs for food supply; Symposium: Management Information Systems in irrigation and drainage. New Delhi, India: ICID. xii, 240p.; iv, 157p.

*Water resource management / Water demand / Irrigation management / Dams / Water scarcity / Water policy / Water allocation / Food production / Food security / Irrigation scheduling / Drip irrigation / Tanks / Hydraulics / Design / Tank irrigation / Economic aspects / Remote sensing / Management Information Systems / Computer software / Waterlogging / Salinity / Water control / Egypt / Malaysia / USA / Algeria / Morocco / Southern Africa / Bulgaria / France / Mexico /*

*Netherlands / Pakistan / Japan / North Dakota / Turtle Lake*  
(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19571)

18687. **ICID. 1996.** 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1G: History Seminar - 6th seminar on history of irrigation, drainage and flood control with special reference to Egypt. New Delhi, India: ICID. vi, 338p.

*History / Irrigation management / Water management / Dams / Drainage / Technology transfer / Irrigated farming / Water users' associations / Egypt / Jordan / Turkey / Spain / Netherlands / Germany / Greece / Nile River / Nea Tiryas / Fayum / Al-Humayma / Anatolia / Konya Plain / Ereğli*  
(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19596)

18688. **ICID. 1995.** 46th International Executive Council, ICID/FAO Workshop on Irrigation Scheduling: From Theory to Practice - Thematic reports, FAO, Rome, Italy, 12-13 September 1995. ICID/FAO workshop. v.p.

*Irrigation scheduling / Water delivery / Farmer-agency interactions / Communication / Constraints / Policy*  
(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 17896)

18689. **ICID; FAO. 1995.** 46th International Executive Council, ICID/FAO Workshop on Irrigation Scheduling: From Theory to Practice, FAO, Rome, Italy, 12-13 September 1995 - Background papers. Rome, Italy: FAO. v.p.

*Irrigation scheduling / Water delivery / Simulation models / Surface irrigation / Irrigation management / Environmental effects / Rice / Salinity / Models / Remote sensing / Water distribution / Farmer managed irrigation systems / Farmer-agency interactions*  
(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 18142)

18690. **IIMI. 1993.** IIMI Network Meeting on Research Programme "Information techniques for improving the management of water in irrigation schemes": Proceedings, Colombo, Sri Lanka, 6-10 December 1993. Unpublished proceedings of the first network meeting, IIMI-CEMAGREF-IMTA-Irrigation Department, Sri Lanka, Punjab Irrigation and Power Department, Pakistan. 5p. + annexes.

*Irrigation management / Water management / Irrigation programs / Information systems / Decision support tools*  
(Location: HQ Call No: IIMI 631.7.1 G000 IIM Record No: H 18245)

18691. **IIMI. 1995.** Training Course on Field Calibration of Irrigation Structures Fordwah Canal Fordwah Eastern Sadiqia Irrigation and Drainage Project: Technical report. 92p.

*Methodology / Pakistan*  
(Location: PAK Call No: IIMI PK-2 G730 IIM Record No: PK 423)

18692. **IIMI. Burkina Faso; Project Management de l'Irrigation - Burkina Faso (PMI-BF) 1996.** Méthodologie d'évaluation des performances et de diagnostic des périmètres irrigués. Report "Project d'Appui Institutionnel au Ministère de l'eau pour la Recherche-Developpement en Management de l'irrigation au Burkina Faso." Project No.F/BUF/DN-AI/DMI/90/3. ii, 89p.

*Irrigation programs / Development projects / Performance evaluation / Performance indexes / Water distribution / Water supply / Equity / Diagnostic techniques / Indicators / Burkina Faso*  
(Location: HQ Call No: IIMI 631.7.1 G226 IIM Record No: H 18285)

18693. **IIMI. Pakistan. 1996.** Training Course on Field Calibration of Irrigation Outlets, Hakra 4-R and Sirajwah Distributaries, Fordwah Eastern Sadiqia Irrigation and Drainage Project, Haroonabad, 22 October to 1 November 1995: Technical report. Lahore, Pakistan: IIMI. iii, 163p. (IIMI-Pakistan training reports T-4)

*Water management / Training / Water measurement / Hydraulics / Flow / Irrigation / Pakistan / Fordwah Eastern Sadiqia / Punjab*  
(Location: HQ Call No: IIMI 631.7.1 G730 IIM Record No: H 9153)

18694. **India. National Remote Sensing Agency. 1996.** Satellite remote sensing and geographic information system techniques to aid irrigation management: Monitoring, evaluation and diagnostic analysis of irrigation system. Hyderabad, India: Water Resources Group. v.p.

*Satellite surveys / Remote sensing / Irrigation management / GIS*  
(Location: ICID Record No: 27061)

18695. **Ingham, D. 1996.** Drip made easier through innovation. *Irrigation Journal*, 46(1):42-44.

*Drip irrigation / Irrigation equipment / Irrigation engineering*  
(Location: HQ Call No: PER Record No: H 18179)

18696. **Ishaq, A. M.; Ibrahim, M. A. 1995.** The design of trickle irrigation systems with microtubes as emitters. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment*: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.708-716.

*Drip irrigation / Irrigation design / Irrigation equipment / Water conservation / Saudi Arabia*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18929)

18697. **ISO. 1991.** Materiel agricole d'irrigation - Vannes de regulation de la pression a action directe, project de norme internationale. Geneva, Switzerland: ISO. 81p. (ISO/DIS 10522)

*Irrigation equipment*  
(Location: ICID Record No: 26924)

18698. **ISO. 1996.** Agricultural irrigation equipment: Filters - Part 1: Classification, draft international standard. Geneva, Switzerland: WMO. 61p. (ISO/DIS 9912-1)

*Irrigation equipment / Standards*  
(Location: ICID Record No: 27404)

18699. **ISO. 1996.** Agricultural irrigation equipment: Plastics saddles for polyethylene pressure pipes, draft international standard. Geneva, Switzerland: WMO. 61p. (ISO/DIS 13460)

*Irrigation equipment / Pipes / Standards*  
(Location: ICID Record No: 27405)

18700. **ISO. 1990.** Irrigation equipment - Hydraulically operated irrigation valves. Geneva, Switzerland: ISO. 6p. (ISO 9635:1990 (E))

*Irrigation equipment / Hydraulics*  
(Location: ICID Record No: 26922)

18701. **Itier, B.; Maraux, F.; Ruelle, P.; Deumier, J. M. 1995.** Thematic paper on theme I: Applicability and limitations of irrigation scheduling methods and techniques. In ICID/FAO Workshop "Irrigation Scheduling: From Theory to Practice", FAO, Rome, Italy, 12-13 September 1995. 14p.

*Irrigation scheduling / Irrigation management / Soil water / Measurement / Water balance / Water stress / Models / Technology transfer*  
(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 17897)

18702. **Izadi, B.; Podmore, T. H.; Seymour, R. M. 1995.** Consideration of air entrapment in surface irrigation: A computer simulation study. *Agricultural Water Management*, 28(3):245-252.

*Surface irrigation / Surge irrigation / Computer models / Simulation models / Infiltration*  
(Location: HQ Call No: PER Record No: H 17725)

18703. **Izadi, B.; King, B.; Westermann, D.; McCann, I. 1996.** Modeling transport of bromide in furrow-irrigated field. *Journal of Irrigation and Drainage Engineering*, 122(2):90-96.

*Surface irrigation / Models / Furrow irrigation / Forecasting*

(Location: HQ Call No: PER Record No: H 18277)

**Abstract:** The purpose of this study was to investigate the reliability of combining a surface irrigation model (SRFR) and two functional solute transport models (RAO and TETrans) in predicting the position of bromide (Br) measured in a 0.81-ha field under furrow irrigation. The SRFR model was used to first predict the infiltrated depths and then RAO and TETrans models were used to predict the position of the solute. Solute was transported according to position flow theory for the first irrigation and both models predicted the position of the solute with good accuracy. The solute was transported slightly faster than estimated by position flow for the second irrigation, resulting in a reduction of correct predictions by both models. Both models predicted poorly for the third irrigation because deviations from position flow were large. RAO model was more successful in predicting the peak solute position, while TETrans was more accurate in predicting mean solute depths. The latter was attributed to the differences between the two models and the sensitivity of TETrans to nodal spacing when predicting peak solute position.

18704. **Izadi, B.; Ashraf, M. S.; Studer, D.; McCann, I.; King, B. 1996.** A simple model for the prediction of nitrate concentration in the potato root zone. *Agricultural Water Management*, 30(1):41-56.

*Irrigation requirements / Sprinkler irrigation / Computer techniques / Models / Potatoes / Nitrogen*  
(Location: HQ Call No: PER Record No: H 18458)

18705. **Jaritz, H. 1996.** The nilometers of ancient Egypt - Two different types of Nile gauges. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol. 1G: History Seminar - 6th seminar on history of irrigation, drainage and flood control with special reference to Egypt - R.I. New Delhi, India: ICID. pp.1-19.

*Irrigation management / History / Flood water / Egypt / Nile River*  
(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 9189)

18706. **Jean, J. S. 1996.** Pumping testing using a siphon well. *Water Resources Management*, 10(2):81-105.

*Pumping / Wells / Groundwater extraction / Aquifers / Water lifting / Irrigation water / Taiwan*  
(Location: HQ Call No: PER Record No: H 18492)

18707. **Jiao, J. J.; Lerner, D. N. 1996.** Using sensitivity analysis to assist parameter zonation in ground water flow model. *Water Resources Bulletin*, 32(1):75-87.  
*Groundwater / Gravity flow / Mathematical models / Hydrology / Simulation / Sensitivity analysis / Optimization / Aquifers / UK / Nottinghamshire*  
**(Location: HQ Call No: PER Record No: H 18366)**
18708. **Jiracheewee, N.; Oron, G.; Murty, V. V. N.; Wuwongse, V. 1996.** Computerized database for optimal management of community irrigation systems in Thailand. *Agricultural Water Management*, 31(3):237-251.  
*Databases / Communal irrigation systems / Irrigation management / Optimization / Linear programming / Information systems / Computer techniques / Thailand*  
**(Location: HQ Call No: PER Record No: H 19340)**
18709. **Johnston, W. R.; Robertson, J. B. (Eds.) 1991.** Management, operation and maintenance of irrigation and drainage systems. New York, NY, USA: ASCE. xiii, 432p. (ASCE manuals and reports on engineering practice no.57)  
*Irrigation management / Irrigation engineering / Drainage / Irrigation systems / Operations / Maintenance / Irrigation operation / Irrigation design / Organizational design / Personnel management / Financial planning / USA*  
**(Location: HQ Call No: 631.7.1 G430 JOH Record No: H 19249)**
18710. **Jones, J. W.; Ritchie, J. T. 1990.** Crop growth models. In Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), *Management of farm irrigation systems*. St. Joseph, MI, USA: ASAE. pp.63-89.  
*Plant growth / Models / Crop production / Soyabeans / Soil water / Water balance / Irrigation effects / Infiltration / Runoff / Evapotranspiration / Soil-water-plant relationships / Water stress / Irrigation management / Computer models / Sandy soils / Nitrogen / Fertilizers / Maize*  
**(Location: HQ Call No: 631.7.8 G000 HOF Record No: H 18306)**
18711. **Jurriens, M.; Mollinga, P. P.; Wester, P. 1996.** Scarcity by design: Protective irrigation in India and Pakistan. Wageningen, Netherlands: Wageningen Agricultural University. Department of Irrigation and Soil and Water Conservation; ILRI. 41p. + annex. (Liquid gold special reports no.1)  
*Protective irrigation / Irrigation management / Water control / Water distribution / Water demand / Farmers' attitudes / India / Pakistan*  
**(Location: HQ Call No: 631.7.1 G635 JUR Record No: H 19611)**
18712. **Kaca, E.; Labedzki, L.; Lukaszewicz, H.; Lojek, W. 1996.** IRRDIS: A model for irrigation control and water distribution. In Ragab, R.; El-Quosy, D. E. D.; van den Broek, B.; Pereira, L. S. (Eds.), *Crop-water-environment models: Selected papers to the workshop organized by the ICID Working Group on "Sustainable Crops and Water Use" at the occasion of the 16th Congress of the International Commission on Irrigation and Drainage at Cairo, Egypt*. Cairo, Egypt: ICID. Egypt National Committee. pp.187-198.  
*Simulation models / Irrigation management / Water distribution / Irrigation water / Control methods / Irrigation scheduling / Poland*  
**(Location: HQ Call No: 631.7.1 G000 RAG Record No: H 19373)**
18713. **Kalu, I. L.; Paudyal, G. N.; Gupta, A. D. 1995.** Equity and efficiency issues in irrigation water distribution. *Agricultural Water Management*, 28(4):335-348.  
*Water distribution / Irrigation water / Policy / Equity / Irrigation efficiency / Optimization / Constraints / Simulation models / Nepal*  
**(Location: HQ Call No: PER Record No: H 17778)**
18714. **Kamra, S. K.; Rao, K. V. G. K.; Ram Singh, S. 1995.** Modeling solute transport in sub-surface drained soil-aquifer system of irrigated lands. *Irrigation and Drainage Systems*, 9(3):189-204.  
*Subsurface drainage / Aquifers / Salinity control / Water table / Soil water relations / Water quality / Irrigation water / Mathematical models*  
**(Location: HQ Call No: PER Record No: H 17797)**
18715. **Kandil, H. M.; Skaggs, R. W.; Abdel Dayem, S.; Aiad, Y. 1995.** DRAINMOD-S: Water management model for irrigated arid lands, crop yield and applications. *Irrigation and Drainage Systems*, 9(3):239-258.  
*Water management / Computer models / Crop yield / Arid lands / Soil salinity / Irrigation water / Drainage / Design / Water quality / Simulation / Leaching / Maize / Cotton / Soyabeans / Wheat / Egypt / Nile Delta*  
**(Location: HQ Call No: PER Record No: H 17800)**
18716. **Kang, Y.; Nishiyama, S. 1996.** Analysis and design of microirrigation laterals. *Journal of Irrigation and Drainage Engineering*, 122(2):75-82.  
*Small scale systems / Irrigation equipment / Design / Analysis / Computer software / Computer techniques*  
**(Location: HQ Call No: PER Record No: H 18275)**  
**Abstract:** A method was developed for the design of microirrigation laterals based on the required average emitter discharge and the required

uniformity of water application. The finite-element method was used to analyze the hydraulics of a lateral. The golden section search was employed to find the operating pressure head of the lateral that can produce the required average emitter discharge along the lateral. Analytical results show that the lateral length for the required uniformity of water application may have three solutions and the diameter may have two solutions when laterals are laid on sloped fields. The design procedure was implemented. When the required average emitter discharge, the required uniformity of water application, one parameter - either the lateral length or diameter, and other conditions are given, then the unknown parameter, the best submain position (paired laterals), and the operating pressure head can be accurately obtained using personal computers. A flow-chart of the computer program for design of the length of paired laterals is included.

18717. **Kang, Y.; Nishiyama, S.; Chen, H. 1996.** Design of microirrigation laterals on nonuniform slopes. *Irrigation Science*, 17(1):3-14.

*Irrigation design / Computer techniques / Simulation models / Hydrology*  
(Location: HQ Call No: PER Record No: H 19628)

18718. **Kang, Y.; Nishiyama, S. 1996.** Design of microirrigation submain units. *Journal of Irrigation and Drainage Engineering*, 122(2):83-89.

*Small scale systems / Irrigation equipment / Design / Analysis / Computer techniques*  
(Location: HQ Call No: PER Record No: H 18276)

**Abstract:** A method was developed for designing microirrigation submain units. The lateral discharge equation was used to express the relationship between the discharge and pressure head at the inlet of a lateral to allow a submain unit to be considered as a lateral and a lateral as an emitter. The finite-element method was employed to analyze the pressure head and discharge distributions along laterals and submain. The golden section search was applied to find the operating pressure heads of the lateral and submain corresponding to the required average emitter discharge. When the required average emitter discharge, the required uniformity of water application one parameter - either the lateral length or diameter, one parameter - either the submain length or diameter, and the field conditions are given, then the unknown parameters, the best submain position (paired laterals), and the operating pressure head of the submain unit can be accurately designed using a personal computer.

18719. **Kang, Y.; Nishiyama, S.; Kawano, H. 1995.** Finite element analysis of large scale microirrigation system. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.84-90.

*Irrigation systems / Large-scale systems / Hydraulics / Analysis*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18830)

18720. **Kato, K. 1995.** Lining joints and translation of techniques: Two-stage compulsory filling method. *Journal of Irrigation Engineering and Rural Planning*, 29:25-41.

*Irrigation canals / Canal linings / Concrete / Canal construction / Drainage / Operations / Maintenance / Costs / Dams / Irrigation engineering*  
(Location: HQ Call No: IIMI 631.7.1 G000 KAT Record No: H 18261)

18721. **Keller, J. 1988.** Taking advantage of modern irrigation in developing countries. In *Drought, water management and food production: Conference proceedings, Agadir (Morocco), November 21-24, 1985*. Mohammedia, Morocco: Fedala. pp.247-260.

*Irrigation systems / Sprinkler irrigation / Developing countries*  
(Location: HQ Call No: 333.91 G236 DRO Record No: H 18135)

18722. **Khalik, M. A. A. 1996.** Impacts of reusing drainage water for agricultural expansion in the Western Nile Delta. In *ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1C, Q.47: R.2.01 Irrigation planning and management: Measures in harmony with the environment*. New Delhi, India: ICID. pp.117-130.

*Water reuse / Drainage / Irrigation water / Water quality / Soil salinity / Water policy / Water management / Crop production / Simulation models / Decision support tools / Analysis / Egypt / Nile Delta*  
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*Irrigation canals / Sedimentary materials / Open channels / Design criteria / Hydraulics / Silt / Pakistan / Punjab*  
(Location: HQ Call No: IIMI 631.7.1 G730 KHA Record No: H 19465)

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*Water resource management / Land management / Irrigable land / Irrigated farming / Sustainability / Water scarcity / Salinity / Waterlogging / Groundwater / Water quality / Case studies / Pakistan / Egypt / Thailand*

(Location: HQ Call No: IIMI 631.7.1 G000 KIJ Record No: H 19413)

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*Evapotranspiration / Models / Water management / Irrigation scheduling / Maize / Potatoes*

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(Location: HQ Call No: 333.91 G000 HEA Record No: H 18701)

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*Irrigation equipment / Sprinkler irrigation / Soil water*

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*Water management / Simulation models / Water balance / Groundwater / Subsurface drainage / Water reuse / Reservoirs / Irrigation water / Water table / Soil salinity / India / Hisar*

(Location: HQ Call No: 631.4 G635 RAO Record No: H 19007)

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*Water management / Computer models / Simulation models / Water reuse / Drainage / Water quality / Irrigation water / Salinity / India / Haryana*

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18733. **Kuroda, M.; Fukuda, T. 1996.** Reuse mechanism of irrigation return flow and water quality maintenance in low lying paddy area. In *ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1C, Q.47: R.2.054* Irrigation planning and management: Measures in harmony with the environment. New Delhi, India: ICID. pp.167-180.

*Irrigation management / Water reuse / Water quality / Measurement / Water balance / Analysis / Models / Paddy fields / Rice / Irrigation programs / Japan / Kubota District / Kyushu*

(Location: HQ Call No: ICID 631.7 G000 ICI Record No: H 19559)

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*Water table / Models / Irrigation management / Water loss / Irrigation water / Water use efficiency / Water balance / Infiltration / France*

(Location: HQ Call No: PER Record No: H 18550)

**Abstract:** The consumption of water by irrigation in agriculture is very large and thus the effects of the management of irrigation systems on aquifers are very important. The basis of this preliminary study into the reduction of this consumption is to improve our understanding of the losses resulting from water transport and deep seepage inside the irrigated areas of cultivation (parcels) at the regional level (100 km) by studying water-table variations with reference to anthropogenic contributions. The use of a hydrodynamic model that incorporates adjustment of the quantity of irrigation water by a reduction coefficient enables actual water-table behavior to be simulated. Losses can thus be deduced from the quantity of irrigation water flowing into the irrigation system and from hydrometeorological parameters. Application of the technique in the Lower Durance (France) indicates that, in this region, 53% of water remains in the irrigation network and 19% is lost by deep seepage, leaving only 28% of the water supplied for use by plants.

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*Irrigation canals / Design / Gates / Water control / Irrigation programs / Rice / Case studies / Malaysia / Sungai Muda / Pulau Pinang*

(Location: HQ Call No: PER Record No: H 19172)

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*Remote sensing / Satellite surveys / Water potential / Development projects / Project appraisal / Land use / Mapping / Evaluation / Economic aspects / Chad / Sahel*

(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18596)

18737. **Lantieri, D. 1995.** Use of high-resolution satellite data for irrigation management and monitoring: Pilot study in Indonesia. In FAO; CEMAGREF, Use of remote

sensing techniques in irrigation and drainage: Proceedings of the Expert Consultation, Montpellier, France, 2-4 November 1993. Rome, Italy: FAO. pp.75-80.

*Remote sensing / Satellite surveys / Mapping / Irrigation management / Monitoring / Irrigation programs / Cost benefit analysis / Indonesia*

(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18599)

18738. **Larhraf, M.; Nishiyama, S. 1995.** Hydraulic characteristics of an economical by-pass injector for microirrigation. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.255-261.

*Irrigation systems / Small scale systems / Fertilizers / Hydraulics / Pipes / Flow measurement / Chemigation*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18856)

18739. **Leng, L. K. 1996.** Management Information System for the Muda Irrigation Scheme in Malaysia. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: *Sustainability of Irrigated Agriculture - Transactions, Vol.1E, Special session: The future of irrigation under increased demand from competitive uses of water and greater needs for food supply; Symposium - R.3: Management Information Systems in irrigation and drainage*. New Delhi, India: ICID. pp.23-41.

*Irrigation management / Management Information Systems / Computer techniques / Irrigation programs / Decision support tools / Planning / Performance evaluation / Water allocation / Mathematical models / Rice / Malaysia*

(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19587)

18740. **Ley, T. W. 1995.** Set-move and permanent sprinkler irrigation systems. *Irrigation Journal*, 45(7):30-32.

*Irrigation equipment / Sprinkler irrigation / Irrigation efficiency / Design / Measurement / Irrigation operation*

(Location: HQ Call No: PER Record No: H 18012)

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*Sprinkler irrigation / Irrigation equipment / Design / Water distribution / China / Japan*

(Location: HQ Call No: PER Record No: H 18811)

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*Irrigation requirements / Water requirements / Irrigation water / Forecasting / Rice / Paddy fields / Irrigation scheduling / Evapotranspiration / Computer models / Mathematical models*

(Location: HQ Call No: PER Record No: H 19336)

**Abstract:** This paper presents the principle and methods of computerizing irrigation scheduling of paddy fields under intermittent submerged conditions. Models for forecasting daily evapotranspiration of rice are discussed. Under intermittent submerged conditions, there is no ponded water layer for most days after the rice turns green, so slight water stress occurs occasionally. The physiological mechanism and ecological characteristics of rice under limited water supply are quite different from those under submerged conditions; therefore, in estimating the evapotranspiration of rice, both lag and overshoot are considered in the model. Another feature of the model concerns the accounting for the contribution from the slow drainage of mobile water after the disappearance of the water layer in the paddy field. The model is compiled in Lotus 123 worksheets and is available as a menu-driven package.

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*River basins / Water management / Computer models / Optimization / China / Sihu Basin*

(Location: HQ Call No: P 4257 Record No: H 18496)

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(Location: HQ Call No: PER Record No: H 17820)

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*Drip irrigation / Communication / Networks / Computer techniques*

(Location: HQ Call No: PER Record No: H 19125)

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gency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.735-739.

*Drip irrigation / Irrigation scheduling / Nitrogen / Water use efficiency / Sugarcane / Crop yield / Vertisols / India / Maharashtra*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18933)

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*Salt water intrusion / Wells / Models / Pumping / USA*

(Location: HQ Call No: PER Record No: H 19239)

18748. **Mahesha, A. 1996.** Steady-state effect of freshwater injection on seawater intrusion. *Journal of Irrigation and Drainage Engineering*, 122(3):149-154.

*Salt water intrusion / Mathematical models / Wells / USA*

(Location: HQ Call No: PER Record No: H 18465)

18749. **Mailhol, J. C.; Revol, P.; Ruelle, P. 1996.** PI-LOTE: Un modele operationnel pour deceler l'apparition du stress hydrique. [PILOTE: An operative model to identify water stress occurrences: Application to a sorghum crop] In Ragab, R.; El-Quosy, D. E. D.; van den Broek, B.; Pereira, L. S. (Eds.), *Crop-water-environment models: Selected papers to the workshop organized by the ICID Working Group on "Sustainable Crops and Water Use" at the occasion of the 16th Congress of the International Commission on Irrigation and Drainage at Cairo, Egypt. Cairo, Egypt: ICID. Egypt National Committee. pp.209-222.*

*Irrigation scheduling / Sorghum / Water balance / Models / Water stress / Indicators / Soil water / France*

(Location: HQ Call No: 631.7.1 G000 RAG Record No: H 19375)

18750. **Majeed, A.; Azam, M.; Aziz, A. 1996.** Salinity effect on root resistance and water uptake: Result of model calibration. In Ragab, R.; El-Quosy, D. E. D.; van den Broek, B.; Pereira, L. S. (Eds.), *Crop-water-environment models: Selected papers to the workshop organized by the ICID Working Group on "Sustainable Crops and Water Use" at the occasion of the 16th Congress of the International Commission on Irrigation and Drainage at Cairo, Egypt. Cairo, Egypt: ICID. Egypt National Committee. pp.81-89.*

*Salinity / Irrigation effects / Soil water / Plant growth / Simulation models / Calibrations / Water balance / Sorghum / Wheat / Lysimetry / USA California*

(Location: HQ Call No: 631.7.1 G000 RAG Record No: H 19366)

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*Irrigation management / Management Information Systems / Computer software Water management / Policy*  
(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19588)
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*Water management / Water use efficiency / Irrigation scheduling / Computer software / Training / Irrigation operation / Irrigation management / Water distribution / Water users*  
(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 18161)
18753. **Makin, I. W.; Skutsch, J. C. 1994.** Software for management of irrigation systems. In FAO, Irrigation water delivery models: Proceedings of the FAO Expert Consultation, Rome, Italy, 4-7 October 1993. Rome, Italy: FAO. pp.135-151.  
*Irrigation management / Irrigation systems / Water management / Water distribution / Computer software / Irrigation programs / Thailand / Sri Lanka / Kraseio / Hakwatuna Oya*  
(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18508)
18754. **Malano, H. M. 1994.** Irrigation main system operation model (IMSOP): Case study and integrated computerization framework. In FAO, Irrigation water delivery models: Proceedings of the FAO Expert Consultation, Rome, Italy, 4-7 October 1993. Rome, Italy: FAO. pp.115-134.  
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(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18507)
18755. **Malano, H. M.; Wood, M. L. 1995.** Surface irrigation management in real time in South Eastern Australia I: Irrigation scheduling. In ICID; FAO, 46th International Executive Council, ICID/FAO Workshop on Irrigation Scheduling: From Theory to Practice, FAO, Rome, Italy, 12-13 September 1995 - Background papers. Rome, Italy: FAO. 10p.  
*Irrigation scheduling / Irrigation management / Surface irrigation / Soil moisture / Monitoring / Measuring instruments / Decision support tools / Forecasting / Australia*  
(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 18148)
18756. **Malaterre, P. O. 1995.** Regulation of irrigation canals: Characterisation and classification. Irrigation and Drainage Systems, 9(4):297-327.  
*Irrigation canals / Flow control / Design / Canal regulation techniques*  
(Location: HQ Call No: PER Record No: H 17891)  
**Abstract:** This article suggests and defines a characterization of irrigation canal regulation methods, based on four criteria: considered variables (controlled, measured, and control action variables), logic of control, design method (structure and technique) and field implementation (configuration and device). Depending on the chosen criterion and partition rule, different classifications can be built from this characterization. In conclusion, a structured characterization table of the main published canal regulation method is presented.
18757. **Manges, H. L.; Spurgeon, W. E.; Huang, Z. M.; Tomsicek, D. J. 1995.** Subsurface dripline spacing and plant population for corn production. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.382-387.  
*Subsurface irrigation / Drip irrigation / Maize / Crop production / Mathematical models / USA / Kansas*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18876)
18758. **Manz, D. H.; Schaalje, M. 1994.** Modelling irrigation conveyance systems using the ICSS model. In FAO, Irrigation water delivery models: Proceedings of the FAO Expert Consultation, Rome, Italy, 4-7 October 1993. Rome, Italy: FAO. pp.225-240.  
*Irrigation systems / Water conveyance / Open channels / Irrigation canals / Computer models / Simulation models*  
(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18514)
18759. **Manzanera, M.; Querner, E. P. 1994.** SIMWAT model utilization. In FAO, Irrigation water delivery mod-

els: Proceedings of the FAO Expert Consultation, Rome, Italy, 4-7 October 1993. Rome, Italy: FAO. pp.201-224.

*Simulation models / Surface water / Groundwater*  
(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18513)

18760. **Marans, E. 1995.** Use and performance of thermoplastics in microirrigation systems. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.675-681.

*Irrigation equipment / Plastics / Irrigation systems / Small scale systems*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18924)

18761. **Marlet, S.; Clopes, A.; Lidon, B.; Maraux, F. 1996.** SEPI-G: Systeme d'évaluation et de planification des performances des irrigations gravitaires. [SEPI-G: Evaluation system and performance planning of furrow irrigation] In Ragab, R.; El-Quosy, D. E. D.; van den Broek, B.; Pereira, L. S. (Eds.), Crop-water-environment models: Selected papers to the workshop organized by the ICID Working Group on "Sustainable Crops and Water Use" at the occasion of the 16th Congress of the International Commission on Irrigation and Drainage at Cairo, Egypt. Cairo, Egypt: ICID. Egypt National Committee. pp.267-287.

*Computer software / Irrigation management / Management planning / Furrow irrigation / Water balance / Niger / Sona*  
(Location: HQ Call No: 631.7.1 G000 RAG Record No: H 19379)

**Abstract:** SEP-G is a software conceived as a useful tool for dimensioning and planning irrigated frameworks, and evaluating the efficiency of their management at the field level for furrow irrigation. The software includes a model able to evaluate the hydraulic performances of the irrigation, coupled with a simple water balance model based on FAO irrigation and drainage papers. The constraints due to the irrigation network management are introduced in the model through imposed dates or frequency of irrigations. SEPI-G includes a data base for managing the input parameters that describes soil, climate, and plant characteristics, as well as the irrigation techniques. It is oriented to pluri-annual and frequencial analysis of the water balance model outputs that allow agronomic interpretations. The necessity of taking into account, in the same time, the actual hydraulic performances of the irrigation network, and the variability of the physical environment conditions is analyzed through the example of the Sona irrigated area in Niger.

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*Irrigation canals / Flow control / Networks / Simulation models / Computer techniques / Water requirements / Water delivery / Hydraulics / Expert systems / Mexico*  
(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18516)

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*Irrigation operation / Mathematical models / Evapotranspiration*  
(Location: HQ Call No: PER Record No: H 19632)

18764. **McClymont, D. J.; Smith, R. J. 1996.** Infiltration parameters from optimisation on furrow irrigation advance data. *Irrigation Science*, 17(1):15-22.

*Furrow irrigation / Infiltration / Mathematical models / Optimization methods*  
(Location: HQ Call No: PER Record No: H 19629)

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*Groundwater / Hydrology / Water quality / Decision making / Mathematical models / Optimization / Wells / USA / Utah*  
(Location: HQ Call No: PER Record No: H 18363)

18766. **Melamed, D.; Hanks, R. J.; Willardson, L. S. 1977.** Model of salt flow in soil with source-sink term. *Irrigation Science*, 41(1):29-33.

*Salinity / Precipitation / Irrigation / Flow / Returns*  
(Location: PAK Call No: F 492 Record No: PK 2719)

18767. **Menenti, M.; Azzali, S.; d'Urso, G. 1995.** Management of irrigation schemes in arid countries. In FAO; CEMAGREF, Use of remote sensing techniques in irrigation and drainage: Proceedings of the Expert Consultation, Montpellier, France, 2-4 November 1993. Rome, Italy: FAO. pp.81-98.

*Remote sensing / Satellite surveys / Irrigation management / Irrigation programs / Performance indexes / Mapping / Land use / Case studies / Water allocation / Water requirements / Crop production / Farmers' attitudes / Simulation models / Arid lands / Italy / Argentina / Libya /*

- Egypt / India Netherlands / Po Plain / Mendoza / Riyadh*  
(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18600)
18768. **Meron, M.; Assaf, R.; Bravdo, B.; Wallach, R.; Hallel, R.; Levin, A.; Dahan, I. 1995.** Soil sensor actuated microirrigation of apples. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.486-491.  
*Irrigation systems / Small scale systems / Drip irrigation / Sprinkler irrigation / Automation / Control methods / Soil moisture / Soil water / Water use efficiency / Crop production / Crop yield / Experiments / Israel*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18892)
18769. **Merriam, J. L. 1996.** Two-dimensional simulation of basin irrigation. I: Theory. Journal of Irrigation and Drainage Engineering, 122(1):65.  
*Basin irrigation / Simulation / Infiltration*  
(Location: HQ Call No: PER Record No: H 17955)
18770. **Misra, R. 1996.** Spatially varied steady flow in irrigation canals. Agricultural Water Management, 30(2):217-235.  
*Irrigation canals / Flow / Mathematical models / Discharges / Seepage*  
(Location: HQ Call No: PER Record No: H 18568)
18771. **Mitchell, A. R.; Shock, C. C.; Perry, G. M. 1995.** Alternating-furrow irrigation to minimize nitrate leaching to groundwater. In Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings, March 5-8, 1995, Kansas City, Missouri. Volume II: Nutrients. St. Joseph, MI, USA: ASAE. pp.139-142.  
*Furrow irrigation / Fertilizers / Nitrogen / Leaching / Crop production / Groundwater / Computer models / Simulation models / Water use efficiency / USA / Oregon*  
(Location: HQ Call No: 333.91 G000 CLE Record No: H 18775)
18772. **Mohan, S.; Arumugam, N. 1996.** Relative importance of meteorological variables in evapotranspiration: Factor analysis approach. Water Resources Management, 10(1):1-20.  
*Evapotranspiration / Hydrology / Rain / Analysis / India / Tamil Nadu / Karnataka*  
(Location: HQ Call No: PER Record No: H 18185)
18773. **Mora, L. A.; Garcés-Restrepo, C. 1996.** Evaluacion del Desempeno del distrito de riego de Samaca Boyaca: Informe preliminar. [Performance evaluation of the Samacà Irrigation District, Boyacà] Unpublished report - IIMI, Colombia. 43p.  
*Irrigation canals / Erosion / Agricultural production / Drainage / Hydraulics / Water distribution / Performance evaluation / Irrigation management / Colombia / Samaca*  
(Location: HQ Call No: IIMI 631.7.1 G518 MOR Record No: H 19419)
18774. **Morabito, J. A.; Fornero, L.; Emili, L.; Thom, R. 1995.** SIMIS and integral administration of irrigation project: Case study "Matriz Gil" secondary canal, Mendoza, Argentina. In ICID; FAO, 46th International Executive Council, ICID/FAO Workshop on Irrigation Scheduling: From Theory to Practice, FAO, Rome, Italy, 12-13 September 1995 - Background papers. Rome, Italy: FAO. 12p.  
*Irrigation programs / Irrigation canals / Computer software / Irrigation efficiency / Performance indexes / Case studies / Argentina*  
(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 18156)
18775. **Moran, M. S. 1995.** Using satellites and aircraft for farm irrigation management in Arizona. In FAO; CEMAGREF, Use of remote sensing techniques in irrigation and drainage: Proceedings of the Expert Consultation, Montpellier, France, 2-4 November 1993. Rome, Italy: FAO. pp.107-114.  
*Remote sensing / Satellite surveys / Irrigation management / Farm management / Cotton / USA / Arizona*  
(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18602)
18776. **Morgan, P. 1995.** Zimbabwe's user-friendly bush pump. Waterlines, 14(2):23-26.  
*Manual pumps / Water lifting / Low lift pumps / Design / Maintenance / Zimbabwe*  
(Location: HQ Call No: PER Record No: H 17732)
18777. **Moustafa, M. M.; Ibrahim, K. A.; Salama, M. M. 1996.** Effects of irrigation delivery system improvements on drainage water. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1C, Q.47: R.1.02 Irrigation planning and management: Measures in harmony with the environment. New Delhi, India: ICID. pp.11-28.  
*Irrigation effects / Water delivery / Water quality / Drainage / Crop yield / Irrigation efficiency / Water reuse / Water balance / Models / Egypt / Daqahliya Governorate*

(Location: HQ Call No: ICID 631.7 G000 ICI  
Record No: H 19549)

18778. **Muirhead, W. A.; Humphreys, E.; Jayawardane, N. S.; Moll, J. L. 1996.** Shallow subsurface drainage in an irrigated vertisol with a perched water table. *Agricultural Water Management*, 30(3):261-282.

*Subsurface drainage / Vertisols / Water table / Waterlogging / Soil water / Measurement / Water potential / Irrigation effects / Flood irrigation / Australia*

(Location: HQ Call No: PER Record No: H 18549)

18779. **Murphy, T. A. 1996.** Sensing the elements: Moisture sensors and weather stations. *Irrigation Journal*, 46(6):16-19.

*Soil moisture / Measurement / Measuring instruments*

(Location: HQ Call No: PER Record No: H 19229)

18780. **Murty, V. V. N.; Sriramany, S. 1994.** A model for estimating water deliveries to tertiary units in large irrigation systems. In *FAO, Irrigation water delivery models: Proceedings of the FAO Expert Consultation, Rome, Italy, 4-7 October 1993. Rome, Italy: FAO. pp.99-113.*

*Water delivery / Irrigation systems / Computer models / Simulation models / Water allocation / Rice / Paddy fields / Crop production / Irrigation requirements / Evapotranspiration / Rain / Sugarcane / Irrigation canals*

(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18506)

18781. **Nakano, Y.; Kuroda, M. 1995.** Microirrigation and water consumption in a rain-shielding vinyl film greenhouse. In *Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.694-700.*

*Irrigation systems / Small scale systems / Evapotranspiration / Vegetables / Crop production / Japan*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18927)

18782. **Nardulli, S. 1995.** Treading water. *Ceres*, 27(6):39-43.

*Pumps / Water lifting / Drip irrigation / Small scale systems / Women / Bangladesh / Vietnam / India / Cambodia / Nepal*

(Location: HQ Call No: P 4141 Record No: H 17746)

18783. **Nawazbhutta, M.; Shahid, B. A.; van der Velde, E. J. 1996.** Using a hydraulic model to prioritize secondary canal maintenance inputs: Results from Punjab, Pakistan. *Irrigation and Drainage Systems*, 10(4):377-392.

*Irrigation canals / Maintenance / Hydraulics / Computer models / Simulation models / Calibrations / Decision support tools / Irrigation management / Pakistan / Punjab / Chenab / Gugera*

(Location: HQ Call No: PER Record No: H 19351)

18784. **New, L. 1996.** Planning center pivots for operating economy. *Irrigation Journal*, 46(3):10-12, 14, 19.

*Irrigation equipment / Sprinkler irrigation / Pipes / Pumping*

(Location: HQ Call No: PER Record No: H 18618)

18785. **Nieber, J. L.; Nguyen, H. V.; Cooper, D. T.; Blaine, M. I.; King, J. S.; St. Ores, J. L. 1995.** Modeling the benefits of best management practices on groundwater quality. In *Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings, March 5-8, 1995, Kansas City, Missouri. Volume II: Nutrients. St. Joseph, MI, USA: ASAE. pp.147-150.*

*Simulation models / Groundwater / Water quality / Nitrogen / Leaching / Crop yield / USA / Minnesota*

(Location: HQ Call No: 333.91 G000 CLE Record No: H 18776)

18786. **Nimah, M. N.; Hanks, R. J. 1973.** Model for estimating soil water, plant, and atmospheric interrelations:I. Description and sensitivity - Model for estimating soil water, plant and atmospheric interrelations:II. Field test of model. *37(4):522-532.*

*Soil-water-plant relationships / Models / Evaporation / Evapotranspiration / Flow / Drainage*

(Location: PAK Call No: F 493 Record No: PK 2720)

18787. **Nishiyama, S.; Cho, T.; Kawano, H.; Ishizaki, K. 1995.** Hydraulic analysis of microirrigation system by unsteady flow approach. In *Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.80-83.*

*Irrigation systems / Hydraulics / Sprinkler irrigation / Reservoirs / Pipes / Computer techniques / Analysis*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18829)

18788. **Oad, R.; Barakat, E. 1996.** Managing irrigation canals to support farm level improvements: The case of Irrigation Improvement Project in Egypt. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1A, Q.46.R.1.10 - Farmers' participation towards sustainable irrigated agriculture. New Delhi, India: ICID. pp.113-125.

*Irrigation canals / Design / Water delivery / Government managed irrigation systems / Irrigation programs / Farmers' attitudes / Case studies / Egypt*

(Location: HQ Call No: ICID 631.7.3 G000 ICI Record No: H 19519)

18789. **Odhiambo, L. O.; Murty, V. V. N. 1996.** Modeling water balance components in relation to field layout in lowland paddy fields. I: Model development. Agricultural Water Management, 30(2):185-199.

*Water balance / Paddy fields / Simulation models / Irrigation water / Evapotranspiration / Seepage / Percolation / Surface runoff*

(Location: HQ Call No: PER Record No: H 18566)

18790. **Odhiambo, L. O.; Murty, V. V. N. 1996.** Modeling water balance components in relation to field layout in lowland paddy fields. II: Model application. Agricultural Water Management, 30(2):201-216.

*Water balance / Paddy fields / Analysis / Simulation models / Irrigation water / Measurement / Water use efficiency / Water management / Irrigation programs / Thailand / Mae Klong River*

(Location: HQ Call No: PER Record No: H 18567)

18791. **Ojha, C. S. P.; Rai, A. K. 1996.** Nonlinear root-water uptake model. Journal of Irrigation and Drainage Engineering, 122(4):198-202.

*Soil moisture / Mathematical models / Soil-water-plant relationships / Water requirements / Plant growth / Irrigation scheduling / Simulation*

(Location: HQ Call No: PER Record No: H 18808)

**Abstract:** Sound irrigation management requires information about root-water uptake patterns of different crops. In the existing literature, the extraction rate of soil moisture by the roots is assumed to be either constant or varying linearly with the root depth, during the crop period. However, both these models have limited application. With this in view, an empirical root-water uptake model in which the extraction rate varies non-linearly with the root depth is proposed. Using experimentally obtained soil-moisture depletion values for non-limiting

soil-moisture conditions, it is found that the proposed model performs better than the constant rate models and linearly varying rate models of root-water uptake. Also, constant as well as linear extraction-rate models are found to be particular cases of the proposed model. Based on simulations for limited soil-moisture conditions, it is also found that the frequency of irrigation is sensitive to the use of root-water uptake models.

18792. **Oleson, J. P. 1996.** Surface water management at an ancient site in Jordan's Southern Desert. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1G: History Seminar - 6th seminar on history of irrigation, drainage and flood control with special reference to Egypt - R.6. New Delhi, India: ICID. pp.141-156.

*History / Water management / Surface water / Water supply / Flood control / Irrigation water / Catchment areas / Drainage / Waste waters / Jordan / Al-Humayma*

(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19600)

18793. **Or, D.; Walker, W. R. 1996.** Effects of spatially variable intake on surface irrigation advance. Journal of Irrigation and Drainage Engineering, 122(2):122-130.

*Surface irrigation / Infiltration / Soil properties / Simulation*

(Location: HQ Call No: PER Record No: H 18280)

**Abstract:** Rational evaluation of surface irrigation systems should consider the effects of spatial variations in soil intake properties on advance trajectories and on the uniformity of infiltrated depths. The objective was to quantify the effects of spatial variations in infiltration parameters on the variability of advance trajectories and on infiltration depths. The soil properties were expressed as random space functions, and small perturbation analysis was applied to analytical solutions for the advance phase. This resulted in closed-form expressions relating the variability in soil properties to the variability in advance trajectories. The expressions were tested using Monte Carlo (MC) simulations. The results show good agreement between the analytical expressions and the simulated mean and variance of advance trajectories for a wide range of intake variabilities. In all cases, a sharp increase in the variance of advance times was observed toward the end of the field. This resulted in discrepancies between the simulated and the closed-form approximation for infiltration depths at large distances from the field inlet. The study provides a predictive tool for the evaluation of management strategies for surface irrigation in heterogeneous fields once the extent of spatial variability in soil intake properties has

been estimated. Some applications for the estimation of uniformity and application efficiency are illustrated.

18794. **Or, D.; Silva, H. R. 1996.** Prediction of surface irrigation advance using soil intake properties. *Irrigation Science*, 16(4):159-167.

*Surface irrigation / Soil properties / Infiltration / Models / Surge irrigation*

(Location: HQ Call No: PER Record No: H 18680)

18795. **Or, D. 1995.** Soil water sensor placement and interpretation for drip irrigation management in heterogeneous soils. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.214-222.

*Drip irrigation / Soil water / Measuring instruments / Stochastic process / Soil properties / Chemigation*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18849)

18796. **Oweis, T. Y.; Taimch, A. Y. 1996.** Evaluation of a small basin water-harvesting system in the arid region of Jordan. *Water Resources Management*, 10(1):21-34.

*Water harvesting / Watersheds / Water balance / Rainfall-runoff relationships / Jordan*

(Location: HQ Call No: PER Record No: H 18186)

18797. **Ozier-Lafontaine, H.; Cabidoche, Y. M. 1995.** THERESA: II. Thickness variations of vertisols for indicating water status in soil and plants. *Agricultural Water Management*, 28(2):149-161.

*Vertisols / Soil water / Soil moisture / Water measurement / Models / Water balance / Soil-water-plant relationships*

(Location: HQ Call No: PER Record No: H 17719)

18798. **Ozis, U. 1996.** Historical irrigation, drainage and flood control works in Turkey. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1G: History Seminar - 6th seminar on history of irrigation, drainage and flood control with special reference to Egypt - R.8. New Delhi, India: ICID. pp.165-177.

*History / Irrigation canals / Drainage / Flood control / Dams / Water conveyance / Turkey / Anatolia*

(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19601)

18799. **Panda, S. N.; Khepar, S. D.; Kaushal, M. P. 1996.** Interseasonal irrigation system planning for waterlogged sodic soils. *Journal of Irrigation and Drainage Engineering*, 122(3):135-144.

*Irrigation management / Planning / Sodic soils / Waterlogging / Irrigation systems / Groundwater / Simulation models / Mathematical models / Irrigation requirements / Crop production / India / Punjab*

(Location: HQ Call No: PER Record No: H 18464)

18800. **Pandey, A. K.; Chauhan, H. S.; Singh, K. K.; Shukla, K. N. 1995.** Distribution characteristics of microsprinklers. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.857-862.

*Irrigation equipment / Sprinkler irrigation / Water distribution / Experiments / India*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18953)

18801. **Pandey, A. K.; Chauhan, H. S.; Shukla, K. N.; Singh, K. K. 1995.** Studies on single nozzle performance of microsprinklers. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.863-868.

*Irrigation equipment / Sprinkler irrigation / Performance / India*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18954)

18802. **Papajorgji, P.; Zazueta, F. S.; Xin, J. N.; Moore, C. 1995.** Simulated crop water use, a GIS approach. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.532-537.

*GIS / Irrigation requirements / Water budget / Simulation models / Databases / Water use / Crop production / USA / Florida*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18900)

18803. **Parsons, J. E.; Evans, R. O. 1990.** Stream water level control for irrigation supplies. In Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), *Management of farm irrigation systems*. St. Joseph, MI, USA: ASAE. pp.971-981.

*Stream flow / Simulation models / Water table / Water storage / Cost benefit analysis / Maize / Yields / USA / North Carolina / Mitchell Creek*  
(Location: HQ Call No: 631.7.8 G000 HOF  
Record No: H 18330)

18804. **Parwal, D. S.; Chauhan, H. S.; Jaiswal, C. S. 1995.** Clean pressure drop and loss coefficients for trickle irrigation screen filters. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.875-880.

*Drip irrigation / Irrigation equipment / Filtration*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18956)

18805. **Patode, R. S.; Mal, B. C. 1996.** Optimal spacing of tubewells in relation to channel losses and lining for multicropping system. *Agricultural Water Management*, 29(2):163-173.

*Shallow tube wells / Aquifers / Mathematical models / Case studies / India*  
(Location: HQ Call No: PER Record No: H 17789)

18806. **Paz, A.; Neira, A.; Castelao, A. 1996.** Soil water regime under pasture in the humid zone of Spain: Validation of an empirical model and prediction of irrigation requirements. *Agricultural Water Management*, 29(2):147-161.

*Irrigation requirements / Soil water relations / Supplementary irrigation / Simulation models / Evapotranspiration / Irrigation efficiency / Pastures / Spain*  
(Location: HQ Call No: PER Record No: H 17788)

18807. **Pereira, L. S.; Teixeira, J. L. 1994.** Modelling for irrigation delivery scheduling: Simulation of demand at sector level with models ISAREG and IRRICEP. In *FAO, Irrigation water delivery models: Proceedings of the FAO Expert Consultation*, Rome, Italy, 4-7 October 1993. Rome, Italy: FAO. pp.13-32.

*Irrigation scheduling / Simulation models / Rice / Paddy fields / Irrigation programs / Soil water / Water balance / Calibrations / Maize / Portugal / Sorraia River Valley*  
(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18501)

18808. **Pereira, L. S. 1995.** Thematic paper on theme II: Inter-relationships between the on-farm irrigation systems and irrigation scheduling methods: Irrigation performances, profitability and environmental consequences. In *ICID/FAO Workshop "Irrigation Scheduling: From The-*

*ory to Practice"*, FAO, Rome, Italy, 12-13 September 1995. 18p.

*Irrigation scheduling / Irrigation systems / Sprinkler irrigation / Drip irrigation / Performance / Economic aspects / Environmental effects*

(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 17898)

18809. **Perla, J.; Ponnambalam, K. 1994.** Multi-reservoir system simulation design using C++ and object oriented programming. In *Cotroneo, G. V.; Rumer, R. R. (Eds.), Hydraulic engineering '94. Vol.2: Proceedings of the 1994 Conference*, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.1030-1034.

*Reservoirs / Simulation models / Computer software*

(Location: HQ Call No: 627 G000 COT Record No: H 19299)

18810. **Perry, C.D.; Thomas, D.L.; Evans, R.O. 1992.** Validation of COSSMO: A combined crop growth and water management model. In *Drainage and water table control: Proceedings of the Sixth International Drainage Symposium*, 13-15 December 1992, Nashville, Tennessee. St Joseph, MI, USA: ASAE. pp.30-37.

*Water management / Water table / Crop yield / Plant growth / Soyabeans / Computer models / Simulation models / USA / North Carolina*

(Location: HQ Call No: 631.62 G000 DRA Record No: H 19149)

18811. **Perry, C. J. 1996.** The IIMI water balance framework: A model for protect level analysis. Colombo, Sri Lanka: IIMI. 18p. (IIMI research report no.5)

*Irrigation management / Irrigation programs / Surface irrigation / Analysis / Water use efficiency / Water balance / Water loss / Seepage / Groundwater / Pumping / Computer models*

(Location: HQ Call No: IIMI 631.7.1 G000 PER Record No: H 19241)

18812. **Perry, E.; Dotson, B. 1996.** The treadle pump - An irrigation technology adapted to the needs of small farmers. *Grid*, 8:6-7.

*Irrigation engineering / Irrigation equipment / Pumps / Technology transfer / Water lifting / West Africa / Africa South of Sahara / Senegal / Mali*

(Location: HQ Call No: P 4257 Record No: H 18497)

18813. **Petrov, K. 1996.** Probability method for environmental impact forecasting of non-conventional water use for irrigation. In *ICID, 16th Congress on Irrigation and Drainage*, Cairo, Egypt, 1996: *Sustainability of Irrigated Agriculture - Transactions*, Vol.1C, Q.47: R.203 *Irrigation planning and management: Measures in harmony with the environment*. New Delhi, India: ICID. pp.145-153.

*Environmental effects / Forecasting / Water use / Waste waters / Water quality / Irrigation water / Irrigated farming / Water balance / Bulgaria*  
(Location: HQ Call No: ICID 631.7 G000 ICI Record No: H 19557)

18814. **Phene, C. J. 1995.** Research trends in microirrigation. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.6-24.

*Small scale systems / Agricultural research / Surveys / Water quality / Fertilizers / Drip irrigation / Design / Salinity / Waste waters / Drainage / Water stress / Irrigation scheduling / Automation / Irrigation requirements / Simulation models / USA*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18819)

18815. **Phene, C. J.; Reginato, R. J.; Itier, B.; Tanner, B. R. 1990.** Sensing irrigation needs. In Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), Management of farm irrigation systems. St. Joseph, MI, USA: ASAE. pp.207-261.

*Irrigation requirements / Plant growth / Soil water / Measurement / Evapotranspiration / Soil-water-plant relationships / Models / Irrigation scheduling / Lysimetry*

(Location: HQ Call No: 631.7.8 G000 HOF Record No: H 18310)

18816. **Phillips, K. P. 1995.** Long-term operation of microirrigation filtration systems: Success, failures and operational solutions. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.579-585.

*Filtration / Water quality / Irrigation systems / Small scale systems / Performance evaluation*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18908)

18817. **Pierzgalski, E. 1995.** Application of subsurface irrigation on a hop plantation. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.729-734.

*Subsurface irrigation / Irrigation design / Soil moisture / Hydraulics / Field crops / Crop yield / Poland*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18932)

18818. **Piggott, A. R.; Bobba, A. G.; Novakowski, K. S. 1996.** Regression and inverse analyses in regional groundwater modeling. Journal of Water Resources Planning and Management, 122(1):1-10.

*Groundwater / Recharge / Discharges / Mathematical models / Calibrations / Regression analysis / Aquifers / Geology / Hydraulics / Statistical analysis / Canada / Ontario / Lambton County / Saint Clair River*

(Location: HQ Call No: PER Record No: H 17822)

18819. **Pitts, D.; Bianchi, M.; Clark, K. 1995.** Scheduling microirrigations for wine grapes using CIMIS. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.792-798.

*Irrigation scheduling / Small scale systems / Management Information Systems / Crop production / Water budget / Computer software / Evapotranspiration / Calibrations / Soil water / USA / California*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18943)

18820. **Plaut, Z.; Carmi, A.; Grava, A. 1996.** Cotton root and shoot responses to subsurface drip irrigation and partial wetting of the upper soil profile. Irrigation Science, 16(3):107-113.

*Drip irrigation / Cotton / Plant growth / Soil moisture / Subsurface drainage*

(Location: HQ Call No: PER Record No: H 18272)

18821. **Playan, E.; Faci, J. M.; Serreta, A. 1996.** Characterizing microtopographical effects on level-basin irrigation performance. Agricultural Water Management, 29(2):129-145.

*Basin irrigation / Performance evaluation / Soil water / Measurement / Simulation*

(Location: HQ Call No: PER Record No: H 17787)

18822. **Playan, E.; Faci, J. M.; Serreta, A. 1996.** Modeling microtopography in basin irrigation. Journal of Irrigation and Drainage Engineering, 122(6):339-347.

*Basin irrigation / Simulation models / Mathematical models / Performance evaluation*

(Location: HQ Call No: PER Record No: H 19623)

**Abstract:** Microtopography has long been regarded as a key variable affecting basin irrigation performance. This paper reports on the extension of a flat bed two-dimensional basin irrigation model to the simulation of irrigation events in basins with microtopography. The model

- incorporates the local surface slopes in the x and y directions to the governing set of partial differential equations. Three field experiments were used to validate the extended model. Evaluation was measured over irregular grids, and geostatistical techniques were applied to estimate the nodal elevation of the computational grids. Results indicate that inclusion of microtopography improves the estimation of the advance and recession processes and produces lower, more realistic estimates of irrigation performance. To further explore this phenomenon, two numerical experiments were devised consisting of a series of simulations on a level basin with gradually growing microtopography. The times of advance and recession and the irrigation performance indexes are significantly affected by field microtopography, even if laser leveling is used.
18823. **Pogue, W. R.; Kline, J. L. 1995.** Watermark moisture sensors - Use with ET based scheduling models. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995*. St. Joseph, MI, USA: ASAE. pp.969-974.  
*Irrigation scheduling / Models / Soil moisture / Measuring instruments / Soil water / Irrigation systems / Automation*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18972)
18824. **Pongput, K. 1996.** Unsteady flow simulation of Pehur high-level canal including automatic downstream water level control gates: Consultancy report. IIMI Pakistan consultancy report. iii, 52p. (IIMI Pakistan report no.C-4)  
*Irrigation canals / Canal regulation techniques / Flow control / Downstream control / Simulation models / Case studies / Pakistan / Pehur*  
(Location: HQ Call No: IIMI 631.7.1 G730 PON Record No: H 19404)
18825. **Ponrajah, A. J. P.; Buddhadasa, S. V. A. 1978.** Procedures for preparation of layout plans and channel system in major irrigation schemes. *Jalavrudhi*, 1(1):36-45.  
*Irrigation programs / Irrigation canals / Canal construction / Distributary canals / Sri Lanka*  
(Location: HQ Call No: P 4258 Record No: H 18583)
18826. **Popov, S.; Dimitrov, P.; Petrova, R.; Kalcheva, S.; Jivkov, J.; Chekhlarova, S.; Moteva, M. 1996.** Management Information System in irrigation. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1E, Special session: The future of irrigation under increased demand from competitive uses of water and greater needs for food supply; Symposium - R.6: Management Information Systems in irrigation and drainage. New Delhi, India: ICID. pp.71-78.  
*Irrigation management / Management Information Systems / Computer software / Forecasting / Irrigation scheduling / Water allocation / Soil moisture / Crop production / Water distribution / Decision support tools / Bulgaria*  
(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19590)
18827. **Popova, Z.; Kuncheva, R. 1996.** Modeling in water losses evaluation for nonhomogeneous furrow set. *Journal of Irrigation and Drainage Engineering*, 122(1):1-6.  
*Water loss / Furrow irrigation / Mathematical models / Calibrations*  
(Location: HQ Call No: PER Record No: H 17949)
18828. **Pradhan, T. M. S. 1996.** Gated or ungated: Water control in government-built irrigation systems: Comparative research in Nepal. Wageningen, Netherlands: Landbouwniversiteit. xviii, 278p.  
*Government managed irrigation systems / Water control / Irrigation canals / Water distribution / Water allocation / Irrigation systems / Rehabilitation / Farming systems / Case studies / History / Irrigated farming / Crop production / Institutions / Policy / Land tenure / Villages / Irrigation management / Water users' associations / Water delivery / Farmer participation / Nepal / Tarai Region / Banganga / Pithuwa / Mahakali*  
(Location: HQ, PAK Call No: 631.7.1 G726 PRA Record No: H 18758)
18829. **Price, D. H. 1995.** The cultural effects of conveyance loss in gravity-fed irrigation systems. *Ethnology*, 34(4):273-291.  
*Water conveyance / Water loss / Irrigation systems / Gravity flow / Water shortage / Water scarcity / Water distribution / Water allocation / Ethnology / Yemen / Indonesia / Sri Lanka / Egypt / Bali / Fayoum*  
(Location: HQ Call No: P 4237 Record No: H 18297)
18830. **Prinz, D.; Tauer, W.; Vögtle, T. 1994.** Application of remote sensing and geographic information systems for determining potential sites for water harvesting. In FAO, *Water harvesting for improved agricultural production: Proceedings of the FAO Expert Consultation, Cairo, Egypt, 21-25 November 1993*. Rome, Italy: FAO. pp.135-144.  
*Water harvesting / Catchment areas / Remote sensing / GIS / Satellite surveys / Computer techniques / Costs / Decision support tools / Runoff*

*water / Irrigation systems / Rain / West Africa / Mali / Sahel*

(Location: HQ Call No: 628.14 G000 FAO Record No: H 18528)

18831. **Przybyla, C. 1995.** Scheduling the sprinkler irrigation system theory and practice in Wielkopolska Region (Poland) In ICID; FAO, 46th International Executive Council, ICID/FAO Workshop on Irrigation Scheduling: From Theory to Practice, FAO, Rome, Italy, 12-13 September 1995 - Background papers. Rome, Italy: FAO. 10p.

*Irrigation scheduling / Sprinkler irrigation / Crop yield / Poland*

(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 18149)

18832. **Pundarikanthan, N. V.; Santhi, C. 1995.** Irrigation scheduling in a developing country: Experiences from Tamil Nadu, India. In ICID; FAO, 46th International Executive Council, ICID/FAO Workshop on Irrigation Scheduling: From Theory to Practice, FAO, Rome, Italy, 12-13 September 1995 - Background papers. Rome, Italy: FAO. 6p.

*Irrigation scheduling / Developing countries / Irrigated farming / Water allocation / Water policy / Water distribution / Irrigation programs / Irrigation canals / India / Tamil Nadu*

(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 18164)

18833. **Qazi, T. N.; Bhutta, M. N.; Hussain, M. S.; Rizvi, S. A. H. 1996.** Management Information System (MIS) application for waterlogging and salinity research. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1E, Special session: The future of irrigation under increased demand from competitive uses of water and greater needs for food supply; Symposium - R.8: Management Information Systems in irrigation and drainage. New Delhi, India: ICID. pp.93-100.

*Irrigation management / Management Information Systems / Waterlogging / Salinity / GIS / Pakistan*

(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19592)

18834. **Qureshi, A. S.; Hussain, S. A. 1996.** Soil water simulations in lysimeter. In Ragab, R.; El-Quosy, D. E. D.; van den Broek, B.; Pereira, L. S. (Eds.), Crop-water-environment models: Selected papers to the workshop organized by the ICID Working Group on "Sustainable Crops and Water Use" at the occasion of the 16th Congress of the International Commission on Irrigation and Drainage at Cairo, Egypt. Cairo, Egypt: ICID. Egypt National Committee. pp.163-174.

*Simulation models / Soil water relations / Lysimetry / Drainage / Irrigation effects / Pakistan*

(Location: HQ Call No: 631.7.1 G000 RAG Record No: H 19372)

18835. **Radhakrishnan, R. 1996.** Satellite monitoring of tank irrigation performance: A case study of Kattiamandal Tank in Tamil Nadu. Hyderabad, India: Water Resources Group. 10p.

*Satellite surveys / Remote sensing / Tank irrigation / Monitoring / Performance / Case studies / India / Tamil Nadu / Kattiamandal Tank*

(Location: ICID Record No: 27059)

18836. **Radovic, G. 1996.** Canal design by dynamic programming. Journal of Irrigation and Drainage Engineering, 122(1):59-63.

*Irrigation canals / Drainage / Design*

(Location: HQ Call No: PER Record No: H 17954)

18837. **Ragab, R.; El-Quosy, D. E. D.; van den Broek, B.; Pereira, L. S. (Eds.) 1996.** Crop-water-environment models: Selected papers to the workshop organized by the ICID Working Group on "Sustainable Crops and Water Use" at the occasion of the 16th Congress of the International Commission on Irrigation and Drainage at Cairo, Egypt. Cairo, Egypt: ICID. Egypt National Committee. v. 301p.

*Simulation models / GIS / Linear programming / Calibrations / Irrigation management / Irrigation scheduling / Irrigation practices / Irrigation water / Irrigation requirements / Crop yield / Maize / Water requirements / Water use / Drainage / Groundwater / Salinity / Waterlogging / Water balance / Arid zones / Nitrogen / Pesticide residues / Leaching / Soil properties / Soil moisture / Soil salinity / Soil water relations / Lysimetry / Water distribution*

(Location: HQ Call No: 631.7.1 G000 RAG Record No: H 19361)

18838. **Raghuwanshi, N. S.; Wallender, W. W. 1996.** Modeling seasonal furrow irrigation. Journal of Irrigation and Drainage Engineering, 122(4):235-242.

*Furrow irrigation / Irrigation scheduling / Simulation / Mathematical models / Calibrations / Surface irrigation / Soil moisture / Infiltration / Crop yield / Soil water / Evapotranspiration / USA / California*

(Location: HQ Call No: PER Record No: H 18810)

**Abstract:** A seasonal furrow irrigation model consisting of submodels to predict irrigation schedule (water balance), irrigation design (surface irrigation hydraulics), and crop yield (yield function) under spatially and temporally variable conditions was developed and verified with the field data. The model was used to predict irrigation performance for each irrigation event during the

season, soil moisture before each irrigation, seasonal evapotranspiration (ET), and bean yield along the furrow at 10-m intervals. In addition, measured inputs along the furrow, including heterogeneous infiltration, soil moisture, and yield were used in conjunction with the model to estimate mean (17.3%) and variation in available water-holding capacity (AWC) (15.4%-19.8%). Variation in crop yield represents an integrated effect of variability in infiltration, soil water characteristics, root depth, soil fertility, microclimate, fertilizer and pesticide applications, plants, and disease. Using the calibrated model, nearly 88% of the variance in ET estimated with the yield function was explained by simulated variation in infiltration characteristics, soil water-holding capacity, and root depth. By assuming homogeneous infiltration characteristics, soil water properties, and root depth, the average absolute error in seasonal ET increased by only 0.6 cm but the variance explained decreased to 30%. Although in absolute terms the impact of heterogeneity seems negligible, Raghuvanshi (1994) showed that heterogeneity strongly affected the optimal flow rate and irrigation time as well as net returns to water.

18839. **Rahman, H. A. A.; Omezzine, A. 1996.** Aflaj water resources management: Tradable water rights to improve irrigation productivity in Oman. *Water International*, 21(2):70-75.

*Water resource management / Irrigation efficiency / Water use efficiency / Water rights / Productivity / Pricing / Water allocation / Surface irrigation / Oman*

(Location: HQ Call No: PER Record No: H 3927)

18840. **Rai, S. N.; Singh, R. N. 1996.** On the prediction of groundwater mound formation due to transient recharge from a rectangular area. *Water Resources Management*, 10(3):189-198.

*Groundwater / Recharge / Aquifers / Mathematical models / Water table*

(Location: HQ Call No: PER Record No: H 18803)

18841. **Rao, K. V. G. K.; Oosterbaan, R. J.; Boonstra, J. 1995.** Regional agro-hydro-salinity model. In Rao, K. V. G. K.; Agarwal, M. C.; Singh, O. P.; Oosterbaan, R. J. (Eds.), Reclamation and management of waterlogged saline soils: National Seminar Proceedings, April 5 to 8, 1994. Karnal, India; Hisar, India: Central Soil Salinity Research Institute; CCS Haryana Agricultural University. pp.303-311.

*Water management / Salinity / Forecasting / Water balance / Groundwater / Simulation models / Computer techniques / Irrigation management / India / Haryana*

(Location: HQ Call No: 631.4 G635 RAO Record No: H 19006)

18842. **Ravina, I.; Paz, E.; Sagi, G.; Schischa, A.; Marcu, A.; Yechiely, Z.; Sofer, Z.; Lev, Y. 1995.** Performance evaluation of filters and emitters with secondary effluent. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.244-249.

*Drip irrigation / Filtration / Effluents / Reservoir storage / Waste waters / Water reuse / Irrigation water / Performance evaluation / Israel*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18854)

18843. **Reaves, R. E. 1995.** Going with the flow: A look at flowmeters. *Irrigation Journal*, 45(6):26-27.

*Irrigation systems / Irrigation equipment / Flow measurement / Irrigation efficiency / Monitoring / Surge irrigation / Furrow irrigation / USA*

(Location: HQ Call No: PER Record No: H 17771)

18844. **Reaves, R. E. 1996.** Lining up Ag sprinklers. *Irrigation Journal*, 46(6):14-17.

*Sprinkler irrigation / Irrigation equipment / USA*

(Location: HQ Call No: PER Record No: H 19462)

18845. **Reaves, R. E. 1996.** Potlatch Corporation: Turning a desert into a poplar forest. *Irrigation Journal*, 46(3):24-26.

*Drip irrigation / Arid lands / Forestry / USA / Oregon*

(Location: HQ Call No: PER Record No: H 18620)

18846. **Reddy, J. M.; Pochop, L. 1996.** Management Information Systems in irrigation. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1E, Special session: The future of irrigation under increased demand from competitive uses of water and greater needs for food supply; Symposium - R.11: Management Information Systems in irrigation and drainage. New Delhi, India: ICID. pp.135-157.

*Irrigation management / Management Information Systems / Computer techniques / Decision support tools / GIS / Water resource management / Irrigation scheduling / Networks / Reservoir operation / Flow measurement / Irrigation canals / Irrigation design / River basins / Water rights / Environmental effects / USA*

(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19595)

18847. **Reddy, L. S. 1994.** Genetic algorithms in ground-water management. In Cotroneo, G. V.; Rumer, R. R. (Eds.), Hydraulic engineering '94. Vol.1: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.293-297.

*Groundwater management / Linear programming / Mathematical models / Wells / Pumping / Optimization*

(Location: HQ Call No: 627 G000 COT Record No: H 19289)

18848. **Reddy, S. L. 1996.** Optimal land grading based on genetic algorithms. Journal of Irrigation and Drainage Engineering, 122(4):183-188.

*Surface irrigation / Surface drainage / Land classification / Mathematical models / Optimization*

(Location: HQ Call No: PER Record No: H 18806)

**Abstract:** Design of a successful and efficient surface irrigation system involves land grading as its first step. Land grading is also an effective method for efficient surface drainage. In this research, a nonlinear optimization model based on genetic algorithms is developed for land grading design of irregular fields. The model can be used to obtain plane as well as curved surfaces. In contrast to the variable models, the proposed optimization model employs an objective function in which the total volume of earth in cut is minimized. The proposed formulation eliminates the need for parallel shifting of optimal graded surface by trial and error to adjust the cut-to-fill ratio to a desired value. This is achieved by imposing a constraint on the cut-to-fill ratio. By eliminating the need for such parallel shifting, the optimality of the graded surface is kept undisturbed. Constraints may also be imposed on the shape of the graded surface, slopes of the surface in either direction, elevation of the surface at turnout, and at any other points. The developed optimization model is applied for grading an irregular field, which appeared in several previous publications concerning land grading design. The results indicate efficiency and robustness of the developed model.

18849. **Renard, K. G.; Stone, J. J. 1994.** Integrated watershed management. In FAO, Water harvesting for improved agricultural production: Proceedings of the FAO Expert Consultation, Cairo, Egypt, 21-25 November 1993. Rome, Italy: FAO. pp.355-379.

*Watershed management / Simulation models / Databases / Data collection / Decision support tools / Water quality / Rain / USA / Arizona*

(Location: HQ Call No: 628.14 G000 FAO Record No: H 18543)

18850. **Renault, D.; Wallender, W. W. 1996.** Initial-inflow-variation impacts on furrow irrigation evaluation. Journal of Irrigation and Drainage Engineering, 122(1):7-14.

*Furrow irrigation / Surface irrigation / Mathematical models / Evaluation*

(Location: HQ Call No: PER Record No: H 17950)

18851. **Replogle, J. A.; Clemmens, A. J.; Bos M. G. 1990.** Measuring irrigation water. In Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), Management of farm irrigation systems. St. Joseph, MI, USA: ASAE. pp.315-370.

*Irrigation water / Water measurement / Pipes / Water delivery / Open channels / Models / Flow measurement / Drainage / Weirs / Flumes / Open channels / Hydraulics*

(Location: HQ Call No: 631.7.8 G000 HOF Record No: H 18312)

18852. **Revol, P.; Clothier, B. E.; Lesaffre, B.; Vachaud, G. 1995.** An approximate time-dependent solution for point-source infiltration. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.603-608.

*Drip irrigation / Infiltration*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18912)

18853. **Revol, P.; Clothier, B. E.; Kosuth, P.; Vachaud, G. 1996.** The free-water pond under a trickle source: A field test of existing theories. Irrigation Science, 16(4):169-173.

*Drip irrigation / Infiltration / Farm ponds / Models*

(Location: HQ Call No: PER Record No: H 18681)

18854. **Rey, J. 1994.** Computer tools for in-seasonal water distribution management: An example of prototype development in Sri Lanka. In FAO, Irrigation water delivery models: Proceedings of the FAO Expert Consultation, Rome, Italy, 4-7 October 1993. Rome, Italy: FAO. pp.189-200.

*Irrigation management / Water distribution / Computer models / Computer software / Management Information Systems / Computer techniques / Sri Lanka / Kirindi Oya*

(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18512)

18855. **Reynolds, C.; Yitayew, M.; Petersen, M. 1995.** Low-head bubbler irrigation systems. Part I: Design. Agricultural Water Management, 29(1):1-24.

*Irrigation design / Gravity flow / Irrigation systems / Small scale systems / Hydraulics / Mathematical models*

(Location: HQ Call No: PER Record No: H 17779)

**Abstract:** Low-head bubbler systems differ from other micro-irrigation systems because they are based on gravity-flow, can operate at pressure as low as 1 m (3.3 ft) and do not require elaborate filtration systems. Despite their simplicity and advantages, low-head bubbler systems lack a well-defined design procedure to facilitate design and installation. A comprehensive design procedure for flow-head bubbler systems is presented and an example gradual slope design is given in detail. The design procedure utilizes head loss gradient charts based on the Darcy-Weisbach equation and the delivery hose elevations are calculated from the energy equation.

18856. **Reynolds, C.; Yitayew, M. 1995.** Low-head bubbler irrigation systems. Part II: Air lock problems. *Agricultural Water Management*, 29(1):25-35.

*Irrigation design / Gravity flow / Irrigation systems / Small scale systems / Water distribution / Hydraulics / Velocity*

(Location: HQ Call No: PER Record No: H 17780)

**Abstract:** Air locks may occur in pipelines of low-pressure, gravity-flow bubbler irrigation systems located on level fields and with design heads as low as one meter (3.3 ft). Air locks in bubbler systems can partially or entirely block the flow of water, and thereby significantly decrease the uniformity of water application. To develop design criteria to prevent air locks from occurring in the delivery hoses, hydraulic laboratory experiments were conducted in the laboratory for smooth plastic hoses with internal diameters of 6, 8, 10, and 13 mm (1/4, 5/16, 3/8, and 1/2 in). Hose diameters less than 6 mm (1/4 in) and greater than 10 mm (3/8 in) are recommended for low-head bubbler systems due to excessive friction losses and poor water distribution uniformity, respectively. For bubbler systems with design heads less than 2 meters (6.6 ft), the 10 mm (3/8 in) diameter hose is recommended with design flows and velocities greater than 1.7 l/min (0.42 US gal/min) and 0.37 m/s (1.2 ft s), respectively. For systems with design head greater than 2 meters (6.6 ft), the 6 mm (1/4 in) diameter hose is recommended with design flows and velocities greater than 0.5 l/min (0.15 US gal/min) and 0.29 m/s (1.0 ft s) respectively.

18857. **Rodrigo, J.; Bonnet, F. 1995.** Computer modeling and simulation of microirrigation subunits. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving*

resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.67-73.

*Small scale systems / Simulation models / Computer models / Mathematical models / Stochastic process / Irrigation design / Design criteria*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18827)

18858. **Rossman, L. A.; Boulos, P. F. 1996.** Numerical methods for modeling water quality in distribution systems: A comparison. *Journal of Water Resources Planning and Management*, 122(2):137-146.

*Mathematical models / Water quality / Water distribution / Water supply*

(Location: HQ Call No: PER Record No: H 18059)

18859. **Rouille, N. 1994.** Calibration and application of a hydraulic model for the operation of an irrigation canal: A study in the Chistian Subdivision, Fordwah/Eastern Sadiqia Area, Punjab, Pakistan. Unpublished research report, IIMI - Pakistan. 30 + annexes. (IIMI-Pakistan student reports no.2)

*Irrigation canals / Hydraulics / Mathematical models / Calibrations / Simulation / Flow control / Irrigation operation / Pakistan / Punjab / Fordwah Eastern Sadiqia / Chishtian Sub-Division*

(Location: HQ Call No: IIMI 631.7.1 G730 ROU Record No: H 19258)

18860. **Sadler, E. J.; Camp, C. R.; Busscher, W. J. 1995.** Emitter flow rate changes caused by excavating subsurface microirrigation tubing. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995.* St. Joseph, MI, USA: ASAE. pp.763-768.

*Subsurface irrigation / Small scale systems / Excavation / Measurement / Field tests*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18938)

18861. **Sagar, V.; Reddy, V. R. 1994?** Farm-size wise analysis of irrigation distribution in India: A comment. Unpublished report. Institute of Development Studies, Jaipur, India. 20p.

*Irrigation canals / Farm size / India / Rajasthan*

(Location: HQ Call No: P 4324 Record No: H 19075)

18862. **Sagardoy, J. A.; Hacho, N.; vanden Bulcke, M.; Bellostas, J. M. 1994.** SIMIS (Scheme Irrigation Management Information System): An introduction to its use and potential. In FAO, *Irrigation water delivery mod-*

els: Proceedings of the FAO Expert Consultation, Rome, Italy, 4-7 October 1993. Rome, Italy: FAO. pp.49-61.

*Irrigation management / Management Information Systems / Computer software / Planning / Irrigation scheduling / Irrigated farming / Accounting*

(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18503)

18863. **Sagardoy, J. A.; Bulke, M. V. 1996.** The SIMIS software and its application. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1E, Special session: The future of irrigation under increased demand from competitive uses of water and greater needs for food supply; Symposium - R.9: Management Information Systems in irrigation and drainage. New Delhi, India: ICID. pp.101-117.

*Irrigation management / Management Information Systems / Computer software / Databases / Climate / Crop production / Soils / Land use / Land tenure / Human resources / Project management / Water requirements / Irrigation scheduling / Maintenance / Costs / Water rates*

(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19593)

18864. **Sagi, G.; Paz, E.; Ravina, I.; Schischa, A.; Marcu, A.; Yechiely, Z. 1995.** Clogging of drip irrigation systems by colonial protozoa and sulfur bacteria. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.250-254.

*Drip irrigation / Water quality / Quality control / Chemical control*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18855)

18865. **Said, S. 1995.** Water balance of a trickle irrigation system on tin-tailings. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.436-441.

*Drip irrigation / Water balance / Lysimetry / Sandy soils / Soil moisture / Crop yield / Percolation / Malaysia*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18884)

18866. **Saleem Bashir, M.; Ittfaq, M.; Wolters, W.; Bhutta, M. N. 1996.** Performance of interceptor drains along Chashma right bank canal, Pakistan. In Vincent, B. (Ed.), 16th ICID Congress: Sustainability of Irrigated Agriculture - Evaluation of the Performance of Subsurface

Drainage Systems: Transactions of the Workshop, Cairo, Egypt, 15-22 September 1996. New Delhi, India: ICID. pp.183-191.

*Irrigation canals / Drains / Design / Subsurface drainage / Performance evaluation / Seepage / Groundwater / Simulation models / Pumping / Pakistan / North-West Frontier Province / Chashma Right Bank Canal*

(Location: HQ Call No: ICID 631.7.8 G000 VIN Record No: H 19508)

18867. **Sally, H.; Keita, A. 1996.** Dimensionnement de réseaux d'irrigation gravitaires: Le débit d'équipement. [On the design discharge of gravity irrigation] Journal of the Burkina Faso Association of Engineers, No.5:70-74

*Irrigation management / Gravity flow / Irrigation design*

(Location: HQ Call No: IIMI 631.7.1 G226 SAL Record No: H 9164)

18868. **Sally, H. 1996.** La maintenance et la viabilité des petits périmètres irrigués du Burkina Faso dans le contexte de l'autogestion paysanne. [Maintenance and farmer self-management of small scale irrigation schemes in Burkina Faso] Paper presented at the International Workshop on Conditions for Farmer-Management of Irrigation Schemes in West Africa, Niamey, Niger, 24-28 September 1996. 19p.

*Small scale systems / Irrigation management / Hydrology / Irrigated farming / Rice / Reservoirs / Resource management / Maintenance / Local management / Burkina Faso*

(Location: HQ Call No: IIMI 631.7.1 G226 SAL Record No: H 9163)

18869. **Sally, H.; Keita, A. 1996.** Analytical approach for determining management targets for the Relative Water Supply indicator and application to small reservoir-based irrigation schemes in Burkina Faso. Paper presented at the IPR, Colombo, 1-3 April 1996. 20p.

*Irrigation management / Water supply / Indicators / Irrigation systems / Reservoirs / Performance evaluation / Rice / Seepage / Water requirements / Burkina Faso*

(Location: HQ Call No: IIMI 631.7.1 G226 SAL Record No: H 9179)

18870. **San-Payo, M. M.; Teixeira, J. L. 1996.** Use of a GIS and a water balance model to estimate irrigation requirements. In Ragab, R.; El-Quosy, D. E. D.; van den Broek, B.; Pereira, L. S. (Eds.), Crop-water-environment models: Selected papers to the workshop organized by the ICID Working Group on "Sustainable Crops and Water Use" at the occasion of the 16th Congress of the International Commission on Irrigation and Drainage at Cairo, Egypt. Cairo, Egypt: ICID. Egypt National Committee. pp.199-208.

*GIS / Water balance / Models / Irrigation requirements / Portugal*

(Location: HQ Call No: 631.7.1 G000 RAG Record No: H 19374)

18871. **Sands, G. R.; Podmore, T. H. 1996.** An environmental sustainability index for agricultural systems. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1C, Q.47: R.3.02 Irrigation planning and management: Measures in harmony with the environment. New Delhi, India: ICID. pp.195-218.

*Environmental sustainability / Agricultural development / Crop production / Simulation models / Indicators / Soil properties / Groundwater / Case studies / Irrigation water / Water quality / USA / Colorado*

(Location: HQ Call No: ICID 631.7 G000 ICI Record No: H 19561)

18872. **Santos, D. V.; Smith, R. E.; Sousa, P. L.; Pereira, L. S. 1996.** Calibration and validation of model Opus for water and nitrate simulation. In Ragab, R.; El-Quosy, D. E. D.; van den Broek, B.; Pereira, L. S. (Eds.), Crop-water-environment models: Selected papers to the workshop organized by the ICID Working Group on "Sustainable Crops and Water Use" at the occasion of the 16th Congress of the International Commission on Irrigation and Drainage at Cairo, Egypt. Cairo, Egypt: ICID. Egypt National Committee. pp.17-28.

*Simulation models / Calibrations / Basin irrigation / Irrigation water / Nitrogen / Fertilizers / Soil water movement / Soil moisture / Maize / Fertigation / Portugal*

(Location: HQ Call No: 631.7.1 G000 RAG Record No: H 19362)

**Abstract:** The model Opus is used to simulate water and nitrate movement through an irrigated soil during a simulation term of five months. The study was developed for two fertigation events in a level-basin 15 x 220 m in Portugal. In each fertigation an average of 85 mm of water and 50 kg N/ha (UAN) were applied. Experimental results in one monitored soil profile were used to calibrate the hydrodynamic components. The solute movement components were then validated for all seven monitored sites. While Opus has been designed for simulation on a long-term basis, integrating a large number of components, the results for a short term application indicated a good ability of the model to describe the water and NO<sub>3</sub>-N movement in level-basin irrigation.

18873. **Santos, F. L. 1996.** Evaluation and adoption of irrigation technologies: I. Management-design curves for furrow and level basin systems. *Agricultural Systems*, 52(2/3):317-329.

*Furrow irrigation / Basin irrigation / Irrigation design / Technology / Irrigation management / Management planning / Infiltration / Simulation models / Surface irrigation / USA*

(Location: HQ Call No: PER Record No: H 19356)

18874. **Sardo, V. I.; Germana, C. 1995.** High-frequency microirrigation for environmental control and increased water application efficiency. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.806-811.

*Irrigation efficiency / Sprinkler irrigation / Environmental control / Citrus fruits / Sicily*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18945)

18875. **Saruwatari, N.; Yomota, A. 1995.** Forecasting system of irrigation water on paddy field by fuzzy theory. *Agricultural Water Management*, 28(2):163-178.

*Rice / Paddy fields / Water requirements / Forecasting / Irrigation water / Water resource management / Japan*

(Location: HQ Call No: PER Record No: H 17720)

18876. **Sawleshwarker, N. R. 1995.** Application of microirrigation technology to major irrigation projects. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.550-551.

*Drip irrigation / Gravity flow / Control systems / Irrigation programs / Small scale systems / River basins / India / Maharashtra / Godavari River Jayakwadi Irrigation Project*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18903)

18877. **Schuermans, W. 1991.** A model to study the hydraulic performance of controlled irrigation canals. Thesis submitted to the Delft University of Technology, Faculty of Civil Engineering, Department of Sanitary Engineering & Water Management, Division of Irrigation. xii, 128p.

*Models / Irrigation water / Water management / Canals / Hydraulics / Performance*

(Location: PAK Call No: D 631.7.1 G000 SCH Record No: PK 120)

18878. **Schwankl, L.; Hanson, B.; Prichard, T. 1996.** Filtration equipment for drip irrigation. *Irrigation Journal*, 46(3):8-9.

*Irrigation equipment / Filtration / Drip irrigation*

(Location: HQ Call No: PER Record No: H 18617)

18879. Segawa, S.; Yamamoto, T.; Tanaka, A.; Inoue, M.; Yokotsuka, S. 1995. Microirrigation for artificial revegetation bed soil focused on arid lands. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.812-817.

*Irrigation systems / Arid lands / Irrigation scheduling / Pipes / Experiments / Soil properties / Plant growth / Soil water movement / Evapotranspiration / Japan / Tottori*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18946)

18880. Selker, J.; Cao, W.; Roseberg, R. 1995. Use of ultra-low rate application devices to eliminate macropore flow during irrigation. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.54-59.

*Surface irrigation / Groundwater / Water quality / Sprinkler irrigation / Small scale systems / Clay soils / Sandy soils / USA / Oregon*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18825)

18881. Shah, F.; Zilberman, D.; Lichtenberg, E. 1995. Optimal combination of pollution prevention and abatement policies: The case of agricultural drainage. Environmental and Resource Economics, 5(1):29-48.

*Subsurface drainage / Pollution control / Water pollution / Waterlogging / Irrigation efficiency / Mathematical models / Simulation / Fiscal policy / Costs / USA / California*

(Location: HQ Call No: P 4298 Record No: H 18984)

18882. Shani, U.; Xue, S.; Gordin-Katz, R.; Warrick, A. W. 1996. Soil-limiting flow from subsurface emitters. I: Pressure measurements. Journal of Irrigation and Drainage Engineering, 122(5):291-295.

*Subsurface irrigation / Drip irrigation / Irrigation equipment*

(Location: HQ Call No: PER Record No: H 19235)

18883. Sharma, M. L.; Mohamud, C. H.; Zain, M. M.; Ahmed, M.; Richards, Q. 1996. Piezometer grid studies to assess pollution sources at tobacco and paddy farms, Kelantan, Malaysia. In Aminuddin, B. Y.; Sharma, M. L.; Willett, I. R. (Eds.), Agricultural impacts on groundwater quality: Proceedings of an international

workshop held in Kota Bharu, Kelantan, Malaysia, 24-27 October 1994. Canberra, Australia: ACIAR. pp.53-63.

*Water pollution / Groundwater / Water quality / Measurement / Experiments / Wells / Tobacco / Rice / Malaysia / Kelantan Plain*

(Location: HQ Call No: 631.7.6.3 G000 AMI Record No: H 19058)

18884. Singh, C. S.; Gupta, S. K.; Ram, S. 1996. Assessment and management of poor quality waters for crop production: A simulation model (SWAM) Agricultural Water Management, 30(1):25-40.

*Water quality / Simulation models / Crop production / Water management / Conjunctive use / Salinity / Irrigation water*

(Location: HQ Call No: PER Record No: H 18457)

18885. Singh, C. S.; Gupta, S. K. 1996. Model for scheduling irrigations with cyclic applications of saline and fresh waters. In Ragab, R.; El-Quosy, D. E. D.; van den Broek, B.; Pereira, L. S. (Eds.), Crop-water-environment models: Selected papers to the workshop organized by the ICID Working Group on "Sustainable Crops and Water Use" at the occasion of the 16th Congress of the International Commission on Irrigation and Drainage at Cairo, Egypt. Cairo, Egypt: ICID. Egypt National Committee. pp.102-110.

*Irrigation scheduling / Models / Water quality / Desalinization / Soil salinity*

(Location: HQ Call No: 631.7.1 G000 RAG Record No: H 19368)

18886. Singh, J.; Kumar, R. 1995. Integrated water management model for SIRSA Irrigation Circle. In Rao, K. V. G. K.; Agarwal, M. C.; Singh, O. P.; Oosterbaan, R. J. (Eds.), Reclamation and management of waterlogged saline soils: National Seminar Proceedings, April 5 to 8, 1994. Karnal, India; Hisar, India: Central Soil Salinity Research Institute; CCS Haryana Agricultural University. pp.282-302.

*Water management / Simulation models / Irrigation canals / Design / Networks / Groundwater / India / Ghaggar River / Sirsa*

(Location: HQ Call No: 631.4 G635 RAO Record No: H 19005)

18887. Singh, R.; Singh, J. 1996. Irrigation planning in cotton through simulation modeling. Irrigation Science, 17(1):31-36.

*Simulation models / Irrigation scheduling / Computer models / Irrigation practices / Cotton / India*

(Location: HQ Call No: PER Record No: H 19631)

18888. Singh, R.; Singh, J. 1995. Irrigation water management for mustard through simulation. In Lamm, F. R.

(Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.633-637.

*Sprinkler irrigation / Computer models / Simulation models / Crop yield / Crop production / Percolation / Evapotranspiration / Water management / Performance evaluation / India / Haryana*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18917)

18889. Singh, R. 1995. On-farm irrigation planning through simulation model in semi-arid region. In Rao, K. V. G. K.; Agarwal, M. C.; Singh, O. P.; Oosterbaan, R. J. (Eds.), Reclamation and management of waterlogged saline soils: National Seminar Proceedings, April 5 to 8, 1994. Karnal, India; Hisar, India: Central Soil Salinity Research Institute; CCS Haryana Agricultural University. pp.347-358.

*Simulation models / Irrigation management / Irrigated farming / Water table / Drainage / Soil water / Crop production / Cotton / Wheat / India / Haryana*

(Location: HQ Call No: 631.4 G635 RAO Record No: H 19009)

18890. Singh, V.; Bhallamudi, S. M. 1996. Complete hydrodynamic border-strip irrigation model. Journal of Irrigation and Drainage Engineering, 122(4):189-197.

*Border irrigation / Mathematical models / Infiltration / Simulation / Surface irrigation*

(Location: HQ Call No: PER Record No: H 18807)

**Abstract:** In this study, a hydrodynamic model is presented for simulating all the phases of border-strip irrigation. The explicit, second-order accurate MacCormack scheme is used for solving the governing equations of surface irrigation. In this method, the advance and recession fronts need not be considered explicitly and any infiltration equation can be coupled to the surface flow equations easily. The empirical Kostiaikov equation (Model IDKO) and the analytical Parlange equation (Model IDPA) for infiltration are considered in this study. The implicit Parlange equation is solved using the Newton-Raphson technique. The models are validated using the experimental data available in literature. The present results are also compared with the earlier numerical results based on the characteristic method. A simple subgrid technique is introduced in order to obtain a high grid resolution near the advancing front and at the same time achieve a minimum computational cost. This is based on using two different grid sizes for computation. An equation for the optimum grid size ratio is

presented and is validated using numerical experimentation.

18891. Skaggs, R. W.; Brev, M. A.; Mohammad, A. T.; Parsons, J. E.; Gilliam, J. W. 1995. Simulation of drainage water quality with DRAINMOD. Irrigation and Drainage Systems, 9(3):259-277.

*Drainage / Water quality / Computer models / Simulation models / Mathematical models / Water table / Soil water / Subsurface drainage / Surface runoff / Nitrogen*

(Location: HQ Call No: PER Record No: H 17801)

18892. Small, L. E.; Rimal, A. 1996. Effects of alternative water distribution rules on irrigation system performance: A simulation analysis. Irrigation and Drainage Systems, 10(1):25-45.

*Water distribution / Irrigation systems / Simulation models / Rice / Water scarcity / Water distribution / Equity / Irrigation efficiency / Performance evaluation*

(Location: HQ Call No: PER Record No: H 18182)

18893. Smets, S. M. P. 1996. Modeling the effects of irrigation management on soil salinity and crop transpiration at the field level. Lahore, Pakistan: IIMI. xi, 135p. (IIMI-Pakistan research report R-4 / IIMI Pakistan student report no.12)

*Water management / Models / Environment / Soil salinity / Irrigation management / Calibrations / Flow / Groundwater / Sensitivity analysis / Pakistan / Fordwah Eastern Sadiqia / Punjab*

(Location: HQ Call No: IIMI 631.7.1 G730 SME Record No: H 9152)

18894. Smith, L. E. D.; Keddal, H. 1995. An assessment of project management software as a decision support system for irrigation anagement in Morocco. Irrigation and Drainage Systems, 9(4):329-355.

*Decision support tools / Irrigation management / Project management / Computer software / Computer techniques / Monitoring / Sensitivity analysis / Management Information Systems / Data collection / Morocco*

(Location: HQ Call No: PER Record No: H 17892)

**Abstract:** The characteristics and potential of project management software as a tool for improved planning and management of on-going irrigation operations are assessed. A commercially available package was tested through use for the simulated planning of the close season maintenance campaign of major pump stations at a large scale irrigation scheme in Morocco. The software was found to be well suited to this planning activity and successfully helped resolve

conflicts in terms of time and resources available. Its potential as a tool for sensitivity analysis and for monitoring and control was clearly demonstrated. The exercise had an immediate effect on management decision making and managers concerned have adopted the software for further trials. The approach is recommended as a means to enhance planning, communication and teamwork for suitable irrigation management operations, but will be most effective with the development of supporting databases to enhance the quality of planning data used.

18895. **Smout, I. 1996.** Management of weeds in irrigation and drainage channels. Unpublished project report (R5500), Water, Engineering and Development Centre, Loughborough University, 1 April 1993 to 31 March 1996. 7p. + annexes.

*Weed control / Aquatic weeds / Open channels / Drainage / Irrigation programs / Maintenance / Expenditure / Africa South of Sahara*

(Location: HQ Call No: P 4300 Record No: H 18986)

18896. **Snoeker, X.; Vermeulen, C. J. 1996.** Use of operational management systems (OMS) in the Netherlands. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1E, Special session: The future of irrigation under increased demand from competitive uses of water and greater needs for food supply; Symposium - R.7: Management Information Systems in irrigation and drainage. New Delhi, India: ICID, pp.79-92.

*Water management / Optimization / Water storage / Mathematical models / Simulation / Control systems / Measurement / Information systems / Decision support tools / Netherlands*

(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19591)

18897. **Sojka, B.; Lentz, R. 1996.** Polyacrylamide for furrow-irrigation erosion control. *Irrigation Journal*, 46(1):8-11.

*Furrow irrigation / Erosion / Soil management / Irrigation water / Infiltration*

(Location: HQ Call No: PER Record No: H 18176)

18898. **Solomon, K. H.; Dedrick, A. R. 1995.** Standards development for microirrigation. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995.* St. Joseph, MI, USA: ASAE, pp.303-313.

*Drip irrigation / Subsurface irrigation / Standards / Small scale systems / Organizations*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18865)

18899. **Sood, V. K.; Chauhan, H. S. 1995.** Hydraulic response of drip irrigation sand filters. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995.* St. Joseph, MI, USA: ASAE, pp.881-886.

*Drip irrigation / Irrigation equipment / Filtration / Discharges*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18957)

18900. **Sriramany, S.; Murty, V. V. N. 1996.** A real-time water allocation model for large irrigation systems. *Irrigation and Drainage Systems*, 10(2):109-129.

*Irrigation systems / Large-scale systems / Water allocation / Mathematical models / Simulation models / Computer software / Irrigation scheduling / Water delivery / Water balance / Paddy fields / Rice / Soil moisture / Irrigation requirements / Water requirements / Thailand*

(Location: HQ Call No: PER Record No: H 18667)

**Abstract:** In this study a simulation model for real-time irrigation scheduling of water deliveries at the tertiary and secondary canal levels of large irrigation systems has been developed. The model is responsive to current season changes in weather and other variables. The irrigation scheduling of the subsequent week is found out at the end of each week by updating the status of the system with real time data up to that week and then by solving the model for the new conditions. The model is based on water balance approach for lowland paddy and a soil moisture simulation approach for determining the irrigation requirements of upland crops. Expected rainfall at different probability levels during the irrigation season was used based on past rainfall data and leaky law. The model was applied to an irrigation system in Thailand for determining the required irrigation deliveries. Result of the application indicate that the model can be used for determining water deliveries in a real-time basis.

18901. **Sritharan, S. I.; Gee, H. R. 1996.** Effect of recharge duration on water-table response. *Journal of Irrigation and Drainage Engineering*, 122(4):228-234.

*Water table / Recharge / Subsurface drainage / Hydraulics / Mathematical models / Irrigation effects*

(Location: HQ Call No: PER Record No: H 18809)

18902. **Srivastava, R. C. 1996.** Design of runoff recycling irrigation system for rice cultivation. *Journal of Irrigation and Drainage Engineering*, 122(6):331-335.

*Runoff / Recycling / Design / Irrigation systems / Rice / Irrigation requirements / Water balance / Models / Simulation / India*

(Location: HQ Call No: PER Record No: H 19622)

**Abstract:** Design of a runoff-recycling-based irrigation system to provide irrigation for rice in monsoon season is a complex problem. The irrigation requirement, as well as the water availability in the form of runoff, vary both in amount and time. The design of an irrigation system based on the irrigation requirement obtained from short-period experiments may lead to faulty design. To overcome this, a simulation study of water balance of the cropped area as well as the tank has been done to determine the catchment command area ratio and size of the tank for a five year return period. It has been found that for transplanting within optimum period, the catchment command ratio should be 5.0 or more and a tank of storage capacity of 132.6 mm will be sufficient at a return period of five years for the U.P. midhills of India. It has also been found that a short-duration variety will be more suitable for such an irrigation system.

18903. **Srivastava, R. C. 1996.** Methodology for optimizing design of integrated tank irrigation system. *Journal of Water Resources Planning and Management*, 122(6):394-402.

*Tank irrigation / Irrigation design / Optimization / Mathematical models*

(Location: HQ Call No: PER Record No: H 19316)

**Abstract:** Tank irrigation has been in existence for centuries. However, optimization of the tank irrigation system is of recent origin. Even this has been attempted in piecemeal, optimizing every segment/aspect of the irrigation system individually. Thus, although each component may be optimal, the system as a whole may not be optimal. This paper presents a methodology to optimize the design of the tank irrigation system by taking into account the constraints, objectives, options of the location, conveyance and application methods, crops and their irrigation levels, productivity, demand of the population dependent upon that area in terms of amount of foodgrains, pulses, oilseeds, nutrients, and the availability of different inputs to achieve an optimal design of all components of the system.

18904. **Stapper, M. 1990.** On-farm irrigation decision support in Southeastern Australia. In Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), *Management of*

farm irrigation systems. St. Joseph, MI, USA: ASAE. pp.917-927.

*Irrigation management / Decision support tools / Irrigated farming / Computer techniques / Irrigation scheduling / Water balance / Computer software / Australia*

(Location: HQ Call No: 631.7.8 G000 HOF Record No: H 18326)

18905. **Steiner, R. A. 1991.** An analysis of water distribution strategies using the irrigation land management simulation model. Dissertation presented to the Faculty of the Graduate School of Cornell University in partial fulfillment of the requirements for the degree of Doctor of Philosophy. xvi, 219p.

*Water distribution / Simulation models / Irrigation systems / Irrigation canals / Performance / Equity / Irrigation scheduling / Water allocation / Water demand / Water supply / Constraints / Case studies / USA / Zimbabwe / Utah / Bear River / Mushedike*

(Location: HQ Call No: D 631.7.1 G430 STE Record No: H 18231)

18906. **Susanto, R. H.; Skaggs, R. W. 1992.** Hydraulic head losses near agricultural drains during drainage and subirrigation. In *Drainage and water table control: Proceedings of the Sixth International Drainage Symposium*, 13-15 December 1992, Nashville, Tennessee. St Joseph, MI, USA: ASAE. pp.419-427.

*Drainage / Subsurface irrigation / Hydraulics / Water table / USA / North Carolina*

(Location: HQ Call No: 631.62 G000 DRA Record No: H 19160)

18907. **Swamee, P. K.; Mishra, G. C.; Salem, A. A. S. 1996.** Optimal design of sloping weir. *Journal of Irrigation and Drainage Engineering*, 122(4):248-255.

*Weirs / Diversion / Design / Mathematical models*  
(Location: HQ Call No: PER Record No: H 18812)

**Abstract:** Weirs are important hydraulic structures constructed across rivers for diverting water for irrigation and power generation. Optimal design of these structures has not been attempted earlier as it involved diverse fields like hydrology, free surface flow, seepage, economics, optimization, and so on. Furthermore, occurrence of a large number of state variables in the constraints is another hindrance in the optimization process. Presented herein is a methodology of optimal designs of pileless, and single-pile sloping floor weirs that are structurally safe. The methodology presented is useful to the design engineer.

18908. **Tabuada, M. A.; Rego, Z. J. C.; Vachaud, G.; Pereira, L. S. 1995.** Modelling of furrow irrigation: Ad-

vance with two-dimensional infiltration. *Agricultural Water Management*, 28(3):201-221.

*Furrow irrigation / Infiltration / Mathematical models / Simulation models / Irrigation efficiency / Optimization*

(Location: HQ Call No: PER Record No: H 17722)

18909. **Tanis, S. W. 1994.** Performance of submerged vanes for control of sediment in an irrigation canal. In Cotroneo, G. V.; Rumer, R. R. (Eds.), *Hydraulic engineering '94*. Vol.2: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.1181-1185.

*Irrigation canals / Sedimentation / Control methods / USA / Arizona / Maricopa County / Grand Canal*

(Location: HQ Call No: 627 G000 COT Record No: H 19302)

18910. **Tanton, T. W.; Armstrong, A. S. B.; Rycroft, D. W. 1996.** Movement of water in restructured saline and sodic clay topsoils under a rainfall simulator. *Agricultural Water Management*, 29(3):255-265.

*Soil water / Drainage / Leaching / Clay soils / Sodic soils / Rain / Simulation*

(Location: HQ Call No: PER Record No: H 18214)

18911. **Tareen, M. A. H.; Mahmood, K.; Iqbal, A.; Khan, M. A.; Kuper, M. 1996.** Water distribution at the secondary level in the Chishtian sub-division. Lahore, Pakistan: IIMI. iv, 179p. (IIMI-Pakistan research report R-5)

*Water distribution / Salinity / Water loss / Hydraulics / Flow / Canals / Equity / Watercourses / Irrigation / Pakistan / Shishtian / Fordwah Eastern Sadiqia / Punjab*

(Location: HQ Call No: IIMI 631.7.1 G730 TAR Record No: H 9154)

18912. **Tariq, A. U. R.; Akbar, A. 1996.** Drainage and irrigation management options in areas with shallow saline ground water: Analysis by using "SWATRE" model. In Ragab, R.; El-Quosy, D. E. D.; van den Broek, B.; Pereira, L. S. (Eds.), *Crop-water-environment models: Selected papers to the workshop organized by the ICID Working Group on "Sustainable Crops and Water Use" at the occasion of the 16th Congress of the International Commission on Irrigation and Drainage at Cairo, Egypt*. Cairo, Egypt: ICID. Egypt National Committee. pp.90-101.

*Computer models / Simulation / Drainage / Design / Irrigation management / Groundwater / Salinity*

(Location: HQ Call No: 631.7.1 G000 RAG Record No: H 19367)

**Abstract:** An efficient management of the irrigation and drainage systems is very essential to ensure optimum soil water regime in the crop root

zone especially in areas with shallow saline ground water. Operation of drainage system alone in these areas may not be adequate to control high water table. The SWATRE model was used to discern a suitable pipe drainage design and analyse drainage efficiency with and without irrigation management using hydro-climatological data of twelve years with the objectives of minimizing water stresses resulting from too wet, too dry or salinity in the root zone. The management options included controlling irrigation supplies and or drainage outflows during selected time periods. It was observed that SWATRE computer model is an efficient tool to simulate crop water environment. Inclusion of irrigation management considerably improves the efficiency of any drainage design and reduces project costs.

18913. **Tedeschi, A.; Barbieri, G.; Menenti, M. 1996.** Impact of saline water on soil properties and crop yield: A simulation study. In Ragab, R.; El-Quosy, D. E. D.; van den Broek, B.; Pereira, L. S. (Eds.), *Crop-water-environment models: Selected papers to the workshop organized by the ICID Working Group on "Sustainable Crops and Water Use" at the occasion of the 16th Congress of the International Commission on Irrigation and Drainage at Cairo, Egypt*. Cairo, Egypt: ICID. Egypt National Committee. pp.126-139.

*Water quality / Irrigation water / Salinity / Soil properties / Crop yield Computer models / Calibrations / Simulation / Italy / Naples*

(Location: HQ Call No: 631.7.1 G000 RAG Record No: H 19370)

18914. **Teixeira, J. L.; Paulo, A. M.; Pereira, L. S. 1996.** Simulation of irrigation demand hydrographs at sector level. *Irrigation and Drainage Systems*, 10(2):159-178.

*Water demand / Irrigation requirements / Simulation models / Irrigation scheduling / Rice / Water balance / Soil water relations / Portugal / Sorraia Valley*

(Location: HQ Call No: PER Record No: H 18670)

18915. **Thayer, S. S. 1995.** Single swap-top spray jet does the job of three. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995*. St. Joseph, MI, USA: ASAE. pp.682-687.

*Irrigation systems / Small scale systems / Sprinkler irrigation / Irrigation equipment*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18925)

18916. **Thiruvengadachari, S. 1996.** Satellite remote sensing techniques for effective irrigation management be-

yond 2000 A.D. Hyderabad, India: Water Resources Group, v.p.

*Satellite surveys / Remote sensing / Irrigation management*

(Location: ICID Record No: 27060)

18917. **Thiruvengadachari, S. 1996.** Use of satellite remote sensing in irrigation system management. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1E, Special session: The future of irrigation under increased demand from competitive uses of water and greater needs for food supply; Symposium: Management Information Systems in irrigation and drainage - R.1. New Delhi, India: ICID. pp.1-14.

*Irrigation management / Remote sensing / Satellite surveys / GIS / Irrigation programs / Performance evaluation / India*

(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19585)

18918. **Timlin, D. J.; Pachepsky, Y. A.; Acock, B.; Whisler, F. 1996.** Indirect estimation of soil hydraulic properties to predict soybean yield using GLYCIM. *Agricultural Systems*, 52(2/3):331-353.

*Soyabeans / Crop yield / Soil moisture / Soil water / Hydraulics / Soil properties / Simulation models / Irrigated farming / USA / Mississippi*

(Location: HQ Call No: PER Record No: H 19357)

18919. **Tingsanchali, T.; Singh, P. R. 1996.** Optimum water resources allocation for Mekong-Chi-Mun Transbasin Irrigation Project, Northeast Thailand. *Water International*, 21(1):20-29.

*Water resources / Water allocation / Irrigation programs / River basin development / Linear programming / Models / Optimization / Thailand / Mekong River Basin / Chi River Basin / Mun River Basin*

(Location: HQ Call No: PER Record No: H 18345)

18920. **Tingsanchali, T.; Loof, R.; Jha, R. 1995.** Water resources utilization in the Chao Phraya River Basin with minimum water shortage and environmental hazards. *Water Resources Journal*, 184:90-96.

*River basin development / Water use / Water resource management / Simulation models / Irrigation programs / Irrigation efficiency / Environmental effects / Drought / Rain / Thailand / Chao Phraya River Basin*

(Location: HQ Call No: PER Record No: H 17947)

18921. **Tothstein, E.; Steenhuis, T. S.; Peverly, J. H.; Geohring, L. D. 1996.** Atrazine fate on a tile drained field

in northern New York: A case study. *Agricultural Water Management*, 31(3):195-203.

*Tillage / Pesticide residues / Leaching / Water pollution / Stream flow / Environmental effects / Field tests / USA / New York*

(Location: HQ Call No: PER Record No: H 19337)

18922. **Travaglia, C. 1995.** Groundwater search by remote sensing: Case histories - Yemen and the Philippines. In FAO; CEMAGREF, Use of remote sensing techniques in irrigation and drainage: Proceedings of the Expert Consultation, Montpellier, France, 2-4 November 1993. Rome, Italy: FAO. pp.39-44.

*Remote sensing / Satellite surveys / Statistical analysis / Groundwater potential / Assessment / Case studies / Yemen / Philippines / Aden / Bohol*

(Location: HQ Call No: 631.7.1 G000 FAO Record No: H 18595)

18923. **Tsay, T. S.; Hoopes, J.; Rashad, S.; Majali, Y. 1994.** Modeling 3-D ground water mounding. In Cotroneo, G. V.; Rumer, R. R. (Eds.), *Hydraulic engineering '94*. Vol.1: Proceedings of the 1994 Conference, Buffalo, New York, August 1-5, 1994. New York, NY, USA: ASCE. pp.317-321.

*Groundwater / Mathematical models / Simulation / USA*

(Location: HQ Call No: 627 G000 COT Record No: H 19292)

18924. **Tsutsui, H.; Hacho, N. 1996.** Agriculture, water and environment in the Aral Sea basin. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1C, Q.47: R.3.10 Irrigation planning and management: Measures in harmony with the environment. New Delhi, India: ICID. pp.313-324.

*Irrigation management / Irrigation requirements / Water management / Environmental effects / Rice / Cropping systems / Water demand / Simulation models / Land use / Central Asia / Uzbekistan / Tajikistan / Kazakhstan / Turkmenistan / Aral Sea Basin / Syr Dar'ya / Amu Dar'ya*

(Location: HQ Call No: ICID 631.7 G000 ICI Record No: H 19569)

18925. **Tyagi, N.K.; Joshi, P.K. 1995.** Irrigation management for drainage volume reduction. In Rao, K. V. G. K.; Agarwal, M. C.; Singh, O. P.; Oosterbaan, R. J. (Eds.), Reclamation and management of waterlogged saline soils: National Seminar Proceedings, April 5 to 8, 1994. Karnal, India; Hisar, India: Central Soil Salinity Research Institute; CCS Haryana Agricultural University. pp.160-175.

*Irrigation management / Drainage / Salinity control / Groundwater / Water quality / Gravity flow / Canal linings / Case studies / Evaluation /*

*Water conveyance / Water distribution / Cost benefit analysis / India*

(Location: HQ Call No: 631.4 G635 RAO Record No: H 18999)

18926. **Tyagi, N. K.; Joshi, P. K. 1996.** Technoeconomic analysis of salinity control measures. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1C, Q.47: R.1.04 Irrigation planning and management: Measures in harmony with the environment. New Delhi, India: ICID. pp.41-53.

*Salinity control / Irrigation canals / Canal linings / Irrigated farming / Water conveyance / Water distribution / Water delivery / Water reuse / Groundwater/ Pumping / Costs / Evaluation / India / Haryana*

(Location: HQ Call No: ICID 631.7 G000 ICI Record No: H 19551)

18927. **Upcraft, M.J.; Noble, D.H.; Carr, M.K.V. 1996.** An heuristic algorithm for short term irrigation scheduling using hose-reel- raingun systems. *Irrigation Science*, 16(4):141-147.

*Irrigation scheduling / Irrigation systems / Irrigation equipment / Irrigation requirements / Mathematical models / Labor / UK*

(Location: HQ Call No: PER Record No: H 18678)

18928. **US. Department of the Interior. Bureau of Reclamation. 1990.** Coachella Canal - Inplace lining prototype all American canal relocation California: Design summary. Denver, CO, USA: US. Bureau of Reclamation. 10p.

*Irrigation canals / Canal linings / USA / California*

(Location: ICID Record No: 27035)

18929. **US. Department of the Interior. Bureau of Reclamation. 1993.** In-place lining prototype project - Coachella Canal - Imperial County, California: Technical report of construction. Denver, CO, USA: US. Bureau of Reclamation. v.p.

*Irrigation canals / Canal linings / Canal construction / USA / California*

(Location: ICID Record No: 27036)

18930. **Usuki, N.; Miyamoto, K.; Yoshino, H. 1996.** Irrigation water control and Management Information Systems in Japan. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1E, Special session: The future of irrigation under increased demand from competitive uses of water and greater needs for food supply; Symposium - R.10: Management Information Systems in irrigation and drainage. New Delhi, India: ICID. pp.119-134.

*Irrigation management / Management Information Systems / Computer software / Water control / Open channels / Pipes / Water storage / Water use efficiency / Water management / Telecommunications / Irrigation programs / Drought / Japan*

(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19594)

18931. **Utah State University. Biological and Irrigation Engineering Department. 1995.** Improved operating procedures manual for the Sharkia Directorate. Draft manual. v, 56p. + appendix.

*Irrigation management / Water management / Irrigation operation / Monitoring / Water distribution / Policy / River basins / Handbooks / Maintenance / Irrigation canals / Water allocation / Egypt / Sharkia / Nile River*

(Location: HQ Call No: P 4160 Record No: H 17871)

18932. **Vabre, A. 1995.** Suspended sediment behaviour modeling in irrigation canals of Pakistan: Operation, maintenance and sedimentation in irrigation canals. Final (unpublished) research report of a joint research project by International Sedimentation Research Institute, Pakistan (IS RIP), IIMI, Pakistan, and Agricultural and Environmental Engineering Research Institute (Cemagref), France. viii, 62p. (IIMI-Pakistan student reports no.7)

*Irrigation canals / Sedimentation / Models / Operations / Maintenance / Simulation / Hydraulics / Calibrations / Pakistan*

(Location: HQ Call No: IIMI 631.7.1 G730 VAB Record No: H 19255)

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*Computer software / Decision support tools / Horticulture / Fertilizers / Drip irrigation / Water deficit / Fertigation*

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*Management Information Systems / Resource management / Irrigation management / Drainage / GIS / Remote sensing*

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*Water distribution / Optimization*

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*Irrigation systems / Automation / Water quality / Salinity / Evapotranspiration / Computer techniques / Irrigation scheduling*

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*Irrigation scheduling / Small scale systems / Irrigation equipment / Irrigation efficiency / Groundwater / Water quality / Water pollution / Seepage / Simulation models*

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*Irrigation management / Automation / Computer techniques / Decision support tools / Small scale systems / Citrus fruits / Crop production / Water management / Irrigation scheduling / USA / Florida*

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*Water balance / Mathematical models / Climate / River basins / Runoff / Evapotranspiration / Precipitation / Soil moisture / Case studies / USA / Mulberry River*

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*Pipes / Discharges / Irrigation equipment / Small scale systems / USA*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18936)

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*Pipes / Irrigation equipment / Design / Water quality / Fish farming / USA / Florida*

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*Irrigation systems / Small scale systems / Automation / Computer techniques / Simulation / Privatization / Expert systems*

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*Horticulture / Soil water / Measuring instruments / Automation / Computer techniques / Irrigation scheduling*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18848)

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*Drip irrigation / Soil water movement / Infiltration / Estimation / Models / USA / Florida*

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*Drip irrigation / Small scale systems / Design / Pipes*

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*Furrow irrigation / Sensitivity analysis / Performance indexes / Runoff / Percolation / Infiltration / Mathematical models / Water requirements / Irrigation efficiency*

(Location: HQ Call No: PER Record No: H 17953)

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*Optimization / Water allocation / Irrigation canals / Irrigation scheduling / Constraints / China / ChenGai / Yellow River*

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(Location: HQ Call No: PER Record No: H 19123)

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*Drip irrigation / Irrigation design / Soil-water-plant relationships / Irrigation practices / Soil properties*

(Location: HQ Call No: PER Record No: H 18271)

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*Drip irrigation / Subsurface irrigation / Tomatoes / Cotton / Crop yield / Soil water*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18839)

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*Irrigation programs / Water quality / Water balance / Percolation / Seepage / Fertilizers / Rice / Evapotranspiration / Surface drainage / Groundwater / Malaysia*

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*Drip irrigation / Tobacco / Crop yield / Optimization / Fertilizers / USA / Georgia / North Carolina / South Carolina*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18919)

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*Drip irrigation / Water use efficiency / Tomatoes / Nutrition / Fertilizers / Crop production / Crop yield*

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(Location: HQ Call No: PER Record No: H 18181)

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*Drip irrigation / Irrigation scheduling / Sugarcane / Water use / Crop yield / Soil moisture / Mauritius*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18930)

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*Soil surveys / Irrigation management / Water management / Soil properties / India*

(Location: HQ Call No: P 4193 Record No: H 17974)

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*Irrigation systems / Small scale systems / Plant growth / Water use efficiency / USA / Florida*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18904)

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18996. **Bhagat, R. M.; Bhuiyan, S. I.; Moody, K. 1996.** Water, tillage and weed interactions in lowland tropical rice: A review. *Agricultural Water Management*, 31(3):165-184.  
*Rice / Tillage / Weed control / Water management*  
(*Location:* HQ *Call No:* PER *Record No:* H 19335)
18997. **Bhuiyan, S. I.; Undan, R. C. 1990.** Irrigation for tropical areas. In Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), *Management of farm irrigation systems*. St. Joseph, MI, USA: ASAE. pp.581-628.  
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(*Location:* HQ *Call No:* 631.7.8 G000 HOF *Record No:* H 18317)
18998. **Boman, B. 1996.** Citrus: Understanding its irrigation requirements. *Irrigation Journal*, 46(2):8-11.  
*Citrus fruits / Irrigation requirements / Water requirements / Water quality / Salinity / Sprinkler irrigation / Irrigation scheduling / USA / Florida*  
(*Location:* HQ *Call No:* PER *Record No:* H 18400)
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*Waste waters / Water reuse / Water conservation / Irrigation water / Forestry / Plant growth*  
(*Location:* HQ *Call No:* P 4260 *Record No:* H 18711)
19000. **Bracy, R. P.; Edling, R. J.; Moser, E. B. 1995.** Drip-irrigation management and fertilization of bell pepper in a humid area. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995*. St. Joseph, MI, USA: ASAE. pp.181-186.
- Drip irrigation / Crop yield / Fertilizers / Nitrogen / Water use efficiency / Soil water / Sandy soils / USA / Louisiana*  
(*Location:* HQ *Call No:* 631.7 G000 LAM *Record No:* H 18844)
19001. **Braunack, M. V.; McPhee, J. E.; Reid, D. J. 1995.** Controlled traffic to increase productivity of irrigated row crops in the semi-arid tropics. *Australian Journal of Experimental Agriculture*, 35:503-513.  
*Irrigated farming / Crop production / Crop yield / Arid zones / Soil properties / Maize / Soybeans / Plant growth / Measurement / Tillage / Australia*  
(*Location:* HQ *Call No:* P 4232 *Record No:* H 18292)
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*Drip irrigation / Plant propagation / Irrigation efficiency / USA / California*  
(*Location:* HQ *Call No:* 631.7 G000 LAM *Record No:* H 18863)
19003. **Briones, G.; Arellano, J. A.; Ramirez, L. E.; Munguia, J. P. 1995.** Irrigation efficiency on muskmelon with drip tape and plastic mulch. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995*. St. Joseph, MI, USA: ASAE. pp.522-525.  
*Irrigation efficiency / Water use efficiency / Drip irrigation / Furrow irrigation / Sprinkler irrigation / Crop production / Crop yield / Soil moisture / USA / Mexico / La Laguna*  
(*Location:* HQ *Call No:* 631.7 G000 LAM *Record No:* H 18898)
19004. **Burt, C. M. 1995.** Advances in chemigation. *Irrigation Journal*, 45(6):8-9.  
*Irrigation practices / Sprinkler irrigation / Fertilizers / Pest control / Chemigation / USA*  
(*Location:* HQ *Call No:* PER *Record No:* H 17769)
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*Crop production / Water requirements / Water management / Irrigation equipment / Water quality / Irrigation systems / Small scale systems / Design*  
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19006. **Camp, C. R.; Sadler, E. J.; Busscher, W. J.; Sojka, R. E.; Karlen, D. L. 1995.** Experiences with microirrigation for agronomic crops in the Southeastern USA. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.638-644.

*Drip irrigation / Maize / Soyabeans / Cotton / Irrigation systems / Small scale systems / Crop production / Crop yield / USA*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18918)

19007. **Camp, C. R.; Hunt, P. G.; Bauer, P. J. 1995.** Subsurface microirrigation management and lateral spacing for cotton in the Southeastern USA. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.368-374.

*Drip irrigation / Subsurface irrigation / Cotton / Crop yield / Irrigation effects / Nitrogen / Fertilizers / Simulation models / Soil water / USA / South Carolina*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18874)

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*Soil-water-plant relationships / Irrigation effects / Crop production / Soil water / Water potential / Water loss / Models / Flow*

(Location: HQ Call No: 631.7.8 G000 HOF Record No: H 18304)

19009. **Carter, D. L.; Westermann, D. T.; Sojka, R. E.; Meek, B. D.; Wright, J. L.; Brown, M. J.; Lehrsch, G. A. 1995.** Controlling nitrate leaching and erosion on irrigated land. In *Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings*, March 5-8, 1995, Kansas City, Missouri. Volume II: Nutrients. St. Joseph, MI, USA: ASAE. pp.27-30.

*Irrigation effects / Furrow irrigation / Erosion / Nitrogen / Leaching / Infiltration / Crop production / Maize / Wheat / USA / Idaho / Kimberly*

(Location: HQ Call No: 333.91 G000 CLE Record No: H 18768)

19010. **Castel, J. R.; Lidon, A. L.; Ginestar, C.; Ramos, C. 1995.** Yield, growth and nitrate leaching in drip-irrigated citrus trees under different fertigation treatments. In Lamm, F. R. (Ed.), *Microirrigation for a changing world:*

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*Drip irrigation / Citrus fruits / Plant growth / Nitrogen / Leaching / Spain / Valencia*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18971)

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*Drip irrigation / Small scale systems / Tomatoes / Crop yield / Soil water / Soil moisture / Measuring instruments / Water use / Monitoring / USA / Florida / Quincy*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18901)

19012. **Cervinka, V. 1990.** A farming system for the management of salt and selenium on irrigated land (agroforestry) Unpublished report. Sacramento, CA, USA: California Department of Food and Agriculture. Agricultural Resources Branch. 17p.

*Agroforestry / Cropping systems / Farming systems / Irrigated farming / Salinity control / USA / California / San Joaquin Valley*

(Location: HQ Call No: P 4185 Record No: H 17933)

19013. **Chandio, B. A.; Yaseen, S. M.; Rao, M. I. 1995.** Comparative suitability of drip irrigation over furrow irrigation. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.526-531.

*Drip irrigation / Furrow irrigation / Soil salinity / Vegetables / Crop yield / Costs / Pakistan*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18899)

19014. **Chartzoulakis, K.; Drosos, N. 1995.** Water use and yield of greenhouse grown eggplant under drip irrigation. *Agricultural Water Management*, 28(2):113-120.

*Water use / Crop yield / Drip irrigation / Evapotranspiration / Irrigation requirements / Soil water relations / Plant growth*

(Location: HQ Call No: PER Record No: H 17716)

19015. **Chaudhry, M. R. 1996.** Salt distribution in soil profile with high watertable under low and high irrigation regimes. Lahore, Pakistan: IWASRI. ix, 48p. (IWASRI publication no.162)

*Soil salinity / Sodic soils / Soil properties / Sandy soils / Soil moisture / Infiltration / Groundwater / Wheat / Sorghum / Irrigated farming / Crop yield / Irrigation water / Water quality / Water requirements / Pakistan*

(Location: HQ Call No: 631.7.2 G730 CHA Record No: H 19386)

19016. **Chauhan, H. S.; Srivastava, P. 1995.** Cabbage growth under different irrigation methods. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.893-898.

*Vegetables / Plant growth / Irrigation effects / Sprinkler irrigation / Drip irrigation / Surface irrigation / India / Panmagar*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18959)

19017. **Clark, G. A.; Stanley, C. D.; Smajstrla, A. G.; Zazueta, F. S. 1995.** Microirrigation design considerations for sandy soil vegetable production systems. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.516-521.

*Drip irrigation / Small scale systems / Design criteria / Irrigation scheduling / Sandy soils / Vegetables / Crop production / Evapotranspiration / USA / Florida*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18897)

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*Crop production / Crop yield / Soybeans / Subsurface irrigation / drainage*

(Location: HQ Call No: 631.62 G000 DRA Record No: H 19161)

19019. **Curtis, L. M.; Powell, A. A.; Tyson, T. W. 1996.** Microirrigation of peaches in the Southeast. Irrigation Journal, 46(2):22-25.

*Horticulture / Small scale systems / Irrigation design / Irrigation requirements / Water requirements / USA*

(Location: HQ Call No: PER Record No: H 18403)

19020. **Cuttle, S. P.; James, A. R. 1995.** Leaching of lime and fertilisers from a reseeded upland pasture on a stagnogley soil in mid-Wales. Agricultural Water Management, 28(2):95-112.

*Leaching / Fertilizers / Water quality / Drainage / Pastures / UK / Wales*

(Location: HQ Call No: PER Record No: H 17715)

19021. **Dasberg, S. 1995.** Drip and spray irrigation of citrus orchards in Israel. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.281-287.

*Drip irrigation / Sprinkler irrigation / Citrus fruits / Water balance / Drainage / Evapotranspiration / Evaporation / Israel*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18860)

19022. **Davies, F. S. 1995.** Microsprinkler irrigation for freeze protection of young citrus trees. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.31-36.

*Sprinkler irrigation / Citrus fruits / Climate / USA / Florida*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18821)

19023. **de Jager, J. M.; Kennedy, J. A. 1995.** Weather-based irrigation scheduling for numerous farms (commercial and small-scale) In ICID; FAO, 46th International Executive Council, ICID/FAO Workshop on Irrigation Scheduling: From Theory to Practice, FAO, Rome, Italy, 12-13 September 1995 - Background papers. Rome, Italy: FAO. 10p.

*Irrigation scheduling / Water use efficiency / Simulation models / Wheat / Crop yield / Technology transfer / Irrigation practices / South Africa*

(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 18144)

19024. **de Silva, C. S. 1995.** Drip irrigation with agrowells for vegetable production in Sri Lanka. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.949-954.

*Drip irrigation / Wells / Vegetables / Crop production / Crop yield / Water use efficiency / Groundwater extraction / Pumping / Case studies / Sri Lanka / North Western Province*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18969)

19025. Domingo, R.; Ruiz-Sanchez, M. C.; Sanchez-Blanco, M. J.; Torrecillas, A. 1996. Water relations, growth and yield of Fino lemon trees under regulated deficit irrigation. *Irrigation Science*, 16(3):115-123.

*Citrus fruits / Yields / Soil-water-plant relationships / Irrigation requirements / Water deficit / Experiments / Measurement / Spain*  
(Location: HQ Call No: PER Record No: H 18273)

19026. Doran, J. W.; Qian, J.; Weier, K. L.; Mosier, A. R.; Peterson, T. A.; Power, J. F. 1995. Soil denitrification and nitrous oxide losses from irrigated corn in Nebraska. In *Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings, March 5-8, 1995, Kansas City, Missouri. Volume II: Nutrients. St. Joseph, MI, USA: ASAE. pp.43-46.*

*Irrigation effects / Maize / Groundwater / Nitrogen / Soil management / Water pollution / USA / Nebraska*  
(Location: HQ Call No: 333.91 G000 CLE Record No: H 18770)

19027. Elawad, O. M. A. 1994. Water availability and cropping pattern in the Gezira Scheme. *The News - F.O.P. of IIMI, March/April(8):34-40.*

*Water availability / Cropping systems / Water use / Rivers / Irrigation water / Irrigation programs / Sudan / Gezira / Blue Nile*  
(Location: HQ Call No: PER Record No: H 19093)

19028. English, M. J.; Musick, J. T.; Murty, V. V. N. 1990. Deficit irrigation. In Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), *Management of farm irrigation systems. St. Joseph, MI, USA: ASAE. pp.631-663.*

*Water deficit / Water use efficiency / Crop production / Economic aspects / Optimization / Irrigation scheduling / Water stress / Furrow irrigation / Surface irrigation / Drip irrigation*  
(Location: HQ Call No: 631.7.8 G000 HOF Record No: H 18318)

19029. Evett, S. R.; Howell, T. A.; Schneider, A. D. 1995. Energy and water balances for surface and subsurface drip irrigated corn. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources /preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Or-*

*lando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.135-140.*

*Drip irrigation / Subsurface irrigation / Maize / Evapotranspiration / Water balance / Models / Soil water / Lysimetry / Precipitation*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18838)

19030. FAO. 1989. Outline irrigation scheduling model. Report prepared by FAO. Land and Water Development Division. 28p.

*Irrigation scheduling / Models / Water balance / Evapotranspiration / Irrigation practices / Irrigation requirements*  
(Location: HQ Call No: P 4248 Record No: H 18396)

19031. Fausey, N. R.; Cooper, R. L. 1995. Water table management for crop production and groundwater quality protection. In *Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings, March 5-8, 1995, Kansas City, Missouri. Volume II: Nutrients. St. Joseph, MI, USA: ASAE. pp.51-54.*

*Water table / Groundwater / Water quality / Crop production / Crop yield / Maize / Soyabeans / Irrigated farming / Soils / Drainage / USA / Ohio*  
(Location: HQ Call No: 333.91 G000 CLE Record No: H 18771)

19032. Fernandez, J. E.; Moreno, F.; Murillo, J. M.; Cayuela, J. A.; Fernandez-Boy, E.; Cabrera, F. 1996. Water use and yield of maize with two levels of nitrogen fertilization in SW Spain. *Agricultural Water Management*, 29(2):215-233.

*Water use / Maize / Crop yield / Nitrogen / Fertilizers / Furrow irrigation / Water balance / Measurement / Lysimetry / Evapotranspiration / Spain*  
(Location: HQ Call No: PER Record No: H 17793)

19033. Flowers, T. J.; Yeo, A. R. 1995. Breeding for salinity resistance in crop plants: Where next? *Grid*, 7:12.

*Salinity control / Cropping systems / Plant growth / Leaching*  
(Location: HQ Call No: P 2472 Record No: H 18353)

19034. Fouche, P. S.; Booyesen, N. 1994. Evaluation of moisture stress in crops by means of remote control aerial surveillance. *Sovenga, South Africa: University of the North. Department of Soil Science. viii, 63p. + appendix. (WRC report no.229/1/94)*

*Moisture stress / Water stress / Soil moisture / Crop production / Soyabeans / Maize / Wheat / Citrus fruits / Fertilizers / Remote sensing /*

*Computer techniques / Technology transfer / Irrigation / South Africa*

(Location: HQ Call No: 631.7.2 G178 FOU Record No: H 18704)

**Abstract:** Report to the Water Research Commission on the Project: "Evaluation of moisture stress in crops by means of remote control aerial surveillance."

19035. **Fukai, S. 1996.** A boost for rainfed rice. Partners in Research for Development, 9:6-12.

*Rice / Rain-fed farming / Agricultural research / Plant growth / Plant propagation / Paddy fields / Crop production / Drought / Asia / South Asia South East Asia / Thailand / Laos / Australia*

(Location: HQ Call No: P 3883 Record No: H 16875)

19036. **Funt, R. C.; Biggs, M. S.; Schmittgen, M. C.; Golden, J. C. 1995.** Influence of microsprinklers on semi-dwarf trees, Ohio. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.477-485.

*Irrigation effects / Sprinkler irrigation / Crop production / Plant growth / Crop yield / USA / Ohio*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18891)

19037. **Funt, R. C.; Schmittgen, M. C.; Golden, J. C. 1995.** Microirrigation effects on two apple cultivars and rootstocks. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.470-476.

*Irrigation effects / Crop production / Plant growth / Crop yield / Experiments / USA / Ohio*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18890)

19038. **Gallardo, M.; Jackson, L. E.; Schulbach, K.; Snyder, R. L.; Thompson, R. B.; Wyland, L. J. 1996.** Production and water use in lettuces under variable water supply. Irrigation Science, 16(3):125-137.

*Vegetables / Plant growth / Yields / Sprinkler irrigation / Evapotranspiration / Water use efficiency / Soil-water-plant relationships Evapotranspiration / USA / California*

(Location: HQ Call No: PER Record No: H 18274)

19039. **Garrity, D. P.; Pernito, R. 1996.** Mungbean response to surface drainage when grown as a pre-rice crop

on waterlog-prone ricelands. Agricultural Water Management, 29(3):299-314.

*Surface drainage / Waterlogging / Water table / Crop yield / Philippines*

(Location: HQ Call No: PER Record No: H 18217)

19040. **Giannetto, G. B.; Petillo, M. G. 1995.** Effects of irrigation and two soil management schemes on yield and fruit quality of peaches in Uruguay. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.431-435.

*Irrigation effects / Soil management / Soil water / Peaches / Plant growth Crop yield / Uruguay*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18883)

19041. **Gupta, S. K. 1995.** Leaching strategies for salinity control. In Rao, K. V. G. K.; Agarwal, M. C.; Singh, O. P.; Oosterbaan, R. J. (Eds.), Reclamation and management of waterlogged saline soils: National Seminar Proceedings, 5 to 8, 1994. Karnal, India; Hisar, India: Central Soil Salinity Research Institute; CCS Haryana Agricultural University. pp.176-188.

*Leaching / Salinity control / Soil salinity / Rain / Irrigation water / Water quality / Conjunctive use / Crop production / Tillage / India*

(Location: HQ Call No: 631.4 G635 RAO Record No: H 19000)

19042. **Haman, D. Z.; Salgado, L. G. 1995.** Microirrigation for fruit production in Chile. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.723-728.

*Drip irrigation / Sprinkler irrigation / Small scale systems / Horticulture / Chile*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18931)

19043. **Haman, D. Z.; Smajstrla, A. G.; Pritchard, R. T.; Lyrene, P. M.; Zazueta, F. S. 1995.** Response of young blueberry plants to microirrigation in Florida. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.420-424.

*Irrigation scheduling / Small scale systems / Sprinkler irrigation / Crop production / Plant growth / Crop yield / Soil water / Measurement / USA / Florida*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18881)

19044. **Hanson, B. R.; Bendixen, W. E. 1995.** Drip irrigation controls soil salinity under row crops. *California Agriculture*, 49(4):19-23.

*Drip irrigation / Soil salinity / Crop production / USA / California / San Joaquin Valley*

(Location: HQ Call No: P 4333 Record No: H 19117)

19045. **Hasegawa, S.; Tabuchi, T. 1995.** Well facilitated paddy fields in Japan. In Tabuchi, T.; Hasegawa, S. (Eds), *Paddy fields in the world*. Tokyo, Japan: Japanese Society of Irrigation, Drainage and Reclamation Engineering. pp.103-124.

*Wells / Water distribution / Rice / Agricultural production / Drainage / Japan*

(Location: HQ Call No: 633.18 G000 TAB Record No: H 18096)

19046. **Hatfield, J. L.; Allen, R. G. 1996.** Evapotranspiration estimates under deficient water supplies. *Journal of Irrigation and Drainage Engineering*, 122(5):301-308.

*Evapotranspiration / Water requirements / Irrigation scheduling / Models / Soil water / Cotton / Sorghum*

(Location: HQ Call No: PER Record No: H 19237)

19047. **Hay, D. R. 1996.** Making hay: Irrigating alfalfa. *Irrigation Journal*, 46(1):12, 14, 18, 20-21.

*Crop-based irrigation / Water requirements / Soil moisture / Irrigation management / Water use*

(Location: HQ Call No: PER Record No: H 18177)

19048. **Helalia, A. M.; Al-Tahir, O. A.; Al-Nabulsi, Y. A. 1996.** The influence of irrigation water salinity and fertilizer management on the yield of Alfalfa (*Medicago sativa* L.) *Agricultural Water Management*, 31(1/2):105-114.

*Irrigation water / Water quality / Salinity / Irrigation effects / Plant growth / Crop yield / Fertilizers / Nitrogen / Basin irrigation / Sprinkler irrigation*

(Location: HQ Call No: PER Record No: H 18577)

19049. **Henggeler, J. C. 1995.** A history of drip-irrigated cotton in Texas. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.669-674.

*Drip irrigation / Costs / Cotton / History / Technology transfer / USA / Texas*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18923)

19050. **Hill, R. W.; Allen, R. G. 1995.** Developing simple irrigation scheduling calendars. In ICID; FAO, 46th International Executive Council, ICID/FAO Workshop on Irrigation Scheduling: From Theory to Practice, FAO, Rome, Italy, 12-13 September 1995 - Background papers. Rome, Italy: FAO. 11p.

*Irrigation scheduling / Developing countries / Wheat / Farmers' attitudes / Pakistan / Punjab*

(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 18145)

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*Irrigation management / Water management / Water control / Crops / Diversification / Irrigation programs / Performance / On-farm research / Farmer participation / Water distribution / Thailand*

(Location: HQ Call No: P 4240 Record No: H 18300)

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*Crop yield / Evapotranspiration / Water use efficiency / Irrigation efficiency / Irrigation effects / Water management / Irrigation management*

(Location: HQ Call No: 631.7.8 G000 HOF Record No: H 18307)

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*Sprinkler irrigation / Furrow irrigation / Runoff / Erosion / Measurement / Infiltration / Tillage / Wheat / Sorghum / Soil properties / USA*

(Location: HQ Call No: 333.91 G000 CLE Record No: H 18793)

19054. **Howell, T. A.; Schneider, A. D.; Stewart, B. A. 1995.** Subsurface and surface microirrigation of corn - U.S. Southern High Plains. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth*

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*Subsurface irrigation / Surface irrigation / Small scale systems / Water use efficiency / Maize / Crop yield / Water deficit / USA*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18875)

19055. **Hussain, G.; Al-Jaloud, A. A.; Karimulla, S. 1996.** Effect of treated effluent irrigation and nitrogen on yield and nitrogen use efficiency of wheat. *Agricultural Water Management*, 30(2):175-184.

*Wheat / Crop yield / Nitrogen / Irrigation water / Water quality / Effluents / Saudi Arabia*

(Location: HQ Call No: PER Record No: H 18565)

19056. **Hussain, M. A.; Amin, M. 1988.** Irrigation application to wheat crop under shallow water table conditions. Report prepared by Directorate of Land Reclamation Irrigation and Power Department. 12p.

*Irrigation / Wheat / Water table / Groundwater / Soils / Water quality / Crop production / Pakistan*

(Location: PAK Call No: F 470 Record No: PK 147)

19057. **Hussain, N.; Khan, G. D.; Mehdi, S. M.; Sarwar, G.; Dogar, M. S.; Hussain, T. 1995.** Use of brackish water for sustained crop production. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995.* St. Joseph, MI, USA: ASAE. pp.129-134.

*Crop production / Water quality / Salinity / Conjunctive use / Soil properties / Lysimetry / Rice / Wheat / Crop yield / Pakistan*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18837)

19058. **Hutmacher, R. B.; Phene, C. J.; Davis, K. R.; Vail, S. S.; Kerby, T. A.; Peters, M.; Hawk, C. A.; Keeley, M.; Clark, D. A.; Ballard, D.; Hudson, N. 1995.** Evapotranspiration, fertility management for subsurface drip Acala and Pima cotton. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995.* St. Joseph, MI, USA: ASAE. pp.147-154.

*Evapotranspiration / Subsurface irrigation / Drip irrigation / Water deficit / Cotton / Plant growth / Crop yield / Clay soils / Soil water / USA / California / San Joaquin Valley*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18840)

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*Salinity / Water quality / Drip irrigation / Plant growth / Horticulture / Leaching / USA / California / San Joaquin Valley*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18834)

19060. **Hutmacher, R. B.; Ayars, J. E.; Vail, S. S.; Bravo, A. D.; Dettinger, D.; Schoneman, R. A. 1996.** Uptake of shallow groundwater by cotton: Growth stage, groundwater salinity effects in column lysimeters. *Agricultural Water Management*, 31(3):205-223.

*Soil-water-plant relationships / Cotton / Plant growth / Groundwater / Salinity / Evapotranspiration / Irrigation water*

(Location: HQ Call No: PER Record No: H 19338)

19061. **IIMI. 1989.** Research network on irrigation management for diversified cropping in rice-based systems: Proceedings of the Organizational Planning Workshop held at the Asian Institute of Technology Bangkok, Thailand 30 November- 3 December 1988. Colombo, Sri Lanka: IIMI. x, 148p.

*Irrigation management / Cropping systems / Diversification / Rice / Policy Research / Decision making / Networks / Sri Lanka / Bangladesh / Malaysia / India / Indonesia / Nepal / Philippines / Thailand / Korea Republic*

(Location: HQ, PAK Call No: IIMI 631.7.2 G000 IIM Record No: PK 465)

**Abstract:** This book constitutes the proceedings of an organizational and planning workshop for a research network on irrigation management for diversified cropping in rice-based system held in late 1988 in Bangkok. The workshop participants agreed to establish research network involving eight humid Tropical Asian countries in which irrigated rice is the main crop during the wet season.

19062. **Ingham, D. 1995.** High desert pistachios. *Irrigation Journal*, 45(7):12-14.

*Crop production / Water table / Drip irrigation / Wells / Pumping / Flood irrigation / Sprinkler irrigation / Soil degradation / USA / Arizona*

(Location: HQ Call No: PER Record No: H 18010)

19063. **Jayasinghe, A. P. R.; Goonasekera, K. G. A. 1993.** Influence of Poly-Ethylene film mulch on the yield of irrigated chilli in the dry zone of Sri Lanka. In Jayasekera, A. A. (Ed.), Tropical agricultural research. Vol.5, 1993: Proceedings of the 5th Annual Congress of the Postgraduate Institute of Agriculture, Peradeniya, 4-5 November 1993. Peradeniya, Sri Lanka: PGIA. pp.41-49.  
*Crop yield / Irrigation requirements / Irrigation practices / Water use efficiency / Sri Lanka*  
(Location: HQ Call No: 630.72 G744 JAY Record No: H 18224)
19064. **Jilani, G.; Ali, R.; Cheema, A. A.; Saleem, M.; Hussain, T. 1995.** Efficiency of manuring under brackish water irrigation for wheat and maize crops. Green house studies to see the efficiency of farm yard manure. pp.267-272.  
*Crop yield / Irrigated farming / Wheat / Groundwater irrigation / Soil properties / Pakistan*  
(Location: PAK Call No: F 473 Record No: PK 2700)
19065. **Kenig, E.; Mor, E.; Oron, G. 1995.** Pulsating microirrigation for optimal water use and control in the soil. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.615-620.  
*Drip irrigation / Soil moisture / Water use efficiency / Israel*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18914)
19066. **Kitamura, Y. 1995.** Rice double cropping and field infrastructure in the Muda irrigation scheme, Peninsular Malaysia. In Tabuchi, T.; Hasegawa, S. (Eds), Paddy fields in the world. Tokyo, Japan: Japanese Society of Irrigation, Drainage and Reclamation Engineering. pp.147-166.  
*Rice / Irrigation systems / Cropping systems / Irrigation scheduling / Irrigated farming / Malaysia*  
(Location: HQ Call No: 633.18 G000 TAB Record No: H 18099)
19067. **Kohno, E.; Sarief, S.; Sufyandi, A. 1995.** Irrigated paddy fields in Java, Indonesia. In Tabuchi, T.; Hasegawa, S. (Eds), Paddy fields in the world. Tokyo, Japan: Japanese Society of Irrigation, Drainage and Reclamation Engineering. pp.81-90.  
*Irrigation systems / Rice / Water requirements / Cropping systems / Indonesia*  
(Location: HQ Call No: 633.18 G000 TAB Record No: H 18093)
19068. **Kumar, A.; Sharma, D. K.; Sharma, H. C. 1995.** Water and nitrogen needs of wheat (*Triticum aestivum*) in sodic soil. Indian Journal of Agricultural Sciences, 65(5):323-327.  
*Water requirements / Irrigation effects / Nitrogen / Wheat / Plant growth / Sodic soils / Field tests / Crop yield / Soil moisture*  
(Location: HQ Call No: P 4348 Record No: H 19278)
19069. **Lamm, F. R.; Spurgeon, W. E.; Rogers, D. H.; Manges, H. L. 1995.** Corn production using subsurface drip irrigation. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.388-394.  
*Subsurface irrigation / Drip irrigation / Maize / Crop production / Crop yield / Water use efficiency / Nitrogen / USA / Kansas / Ogallala*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18877)
19070. **Lentz, R.; Sojka, B. 1996.** Irrigation water quality alters furrow erosion and infiltration. Irrigation Journal, 46(6):12-14.  
*Irrigation water / Water quality / Infiltration / Furrow irrigation / Erosion / USA / Australia*  
(Location: HQ Call No: PER Record No: H 19228)
19071. **Li, J.; Kawano, H. 1996.** Uniformity of water within the root zone under sprinkler irrigation. Journal of Irrigation Engineering and Rural Planning, 30:89-93.  
*Sprinkler irrigation / Soil-water-plant relationships / Soil moisture / Japan*  
(Location: HQ Call No: PER Record No: H 18339)
19072. **Liyanage, N.; Goonasekera, K.G.A.; Koga, K. 1993.** Water use, soil water relations and yield of cowpea under a minor irrigation tank. In Jayasekera, A. A. (Ed.), Tropical agricultural research. Vol.5, 1993: Proceedings of the 5th Annual Congress of the Postgraduate Institute of Agriculture, Peradeniya, 4-5 November 1993. Peradeniya, Sri Lanka: PGIA. pp.29-40.  
*Tank irrigation / Soil water relations / Water use / Crop yield / Soil moisture / Sri Lanka*  
(Location: HQ Call No: 630.72 G744 JAY Record No: H 18223)
19073. **Locascio, S. J.; Smajstrla, A. G. 1995.** Fertilizer timing and pan evaporation scheduling for drip irrigated tomato. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.175-180.

*Drip irrigation / Tomatoes / Irrigation scheduling / Crop yield / USA / Florida*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18843)

19074. **Magar, S. S. 1995.** Efficient water utilisation through micro irrigation. In Indian Society of Water Management, National Symposium on Managing Water Resources for Sustainable Agriculture and Environment, Gujarat Agricultural University, Gujarat, India, October 5-7, 1995: Souvenir. pp.29-31.

*Water use efficiency / Small scale systems / Drip irrigation / India*

(Location: HQ Call No: P 4193 Record No: H 17973)

19075. **Malano, H. 1996.** Integrated water management for pumped irrigation schemes in the Red River Delta of Vietnam. Grid, 9:10-11.

*Water management / Irrigation operation / Irrigation programs / Agricultural development / Vietnam / Red River Delta*

(Location: HQ Call No: P 4338 Record No: H 19232)

19076. **Malavia, D. D.; Khanpara, V. D.; Shobhana, H. K.; Golakiya, B. A. 1995.** A comparison of irrigation methods in arid and semi-arid Western Gujarat- India. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.464-469.

*Drip irrigation / Sprinkler irrigation / Arid lands / Crop production / Crop yield / Groundnuts / Sugarcane / Water use efficiency / India / Gujarat*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18889)

19077. **Manchanda, H. R. 1995.** Potential and prospects of the utilisation of brackish ground and drainage waters for irrigation. In Rao, K. V. G. K.; Agarwal, M. C.; Singh, O. P.; Oosterbaan, R. J. (Eds.), Reclamation and management of waterlogged saline soils: National Seminar Proceedings, April 5 to 8, 1994. Karnal, India; Hisar, India: Central Soil Salinity Research Institute; CCS Haryana Agricultural University. pp.213-218.

*Water quality / Irrigation water / Groundwater / Drainage / Surface water / Conjunctive use / Salinity / Crop production / Crop yield / India*

(Location: HQ Call No: 631.4 G635 RAO Record No: H 19003)

19078. **Martin, D. L.; Eisenhauer, D. E.; Volkmer, M. J.; Boldt, A. L. 1995.** Impact of tillage and sprinkler packages on center pivot efficiency. In Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceed-

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*Sprinkler irrigation / Tillage / Runoff water / Measurement / USA / Nebraska*

(Location: HQ Call No: 333.91 G000 CLE Record No: H 18794)

19079. **Martin, D. L.; Stegman, E. C.; Fereres, E. 1990.** Irrigation scheduling principles. In Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), Management of farm irrigation systems. St. Joseph, MI, USA: ASAE. pp.155-203.

*Irrigation scheduling / Computer techniques / Water balance / Soil-water-plant relationships / Evapotranspiration / Irrigation efficiency / Rain / Water stress / Plant growth / Simulation models / Salinity control / Leaching / Monitoring*

(Location: HQ Call No: 631.7.8 G000 HOF Record No: H 18309)

19080. **Martin, D. L.; Eisenhauer, D. E.; Volkmer, M. J.; Boldt, A. L. 1995.** Separate placement of nitrogen and irrigation water to reduce leaching. In Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings, March 5-8, 1995, Kansas City, Missouri. Volume II: Nutrients. St. Joseph, MI, USA: ASAE. pp.127-130.

*Irrigation water / Fertilizers / Nitrogen / Leaching / Crop production / Groundwater / USA / Nebraska*

(Location: HQ Call No: 333.91 G000 CLE Record No: H 18774)

19081. **McMullin, E. 1996.** Irrigation twist counters 30-day rain. Irrigation Journal, 46(6):8-9.

*Irrigated farming / Rain / Irrigation water / Water quality / Potatoes / Soil-water-plant relationships / USA*

(Location: HQ Call No: PER Record No: H 19227)

19082. **Merrey, D. J. 1990.** Warabandi in Pakistan. In Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), Management of farm irrigation systems. St. Joseph, MI, USA: ASAE. pp.945-957.

*Irrigation scheduling / Farmer participation / Irrigation systems / Watercourses / Pakistan*

(Location: HQ Call No: 631.7.8 G000 HOF Record No: H 18328)

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*Water use / Soil moisture / Drip irrigation / Basin irrigation / Evapotranspiration / Soil-water-plant relationships / Water requirements*

- (Location: HQ Call No: PER Record No: H 18218)
19084. **Mohamed, M. E. S.; El-Haddad, E. H.; Saleh, M. E.; El-Ghamry, W. M. 1994.** The response of cotton to different irrigation regimes and water table depths. *Menofiya Journal of Agricultural Research*, 19(2):1217-1241.  
*Cotton / Irrigation requirements / Water requirements / Water table / Groundwater / Crop yield / Soil salinity / Lysimetry*  
(Location: HQ Call No: P 4177 Record No: H 17926)
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*Evapotranspiration / Rice / Rain / Irrigation requirements*  
(Location: HQ Call No: PER Record No: H 18187)
19086. **Moolman, J. H.; de Clercq, W. P.; Wessels, W. P. J.; Meiri, A.; du Plessis, H. M. 1995.** Salinity effects on *Vitis vinifera* L. (cv. Colombar) grapevine. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995*. St. Joseph, MI, USA: ASAE. pp.123-128.  
*Sprinkler irrigation / Water quality / Salinity / Soil salinity / Horticulture / Plant growth / Crop yield / Soil water / Water balance / South Africa / Breede River Valley*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18836)
19087. **Muhammad, S.; Makhdam, M. I. 1973.** Effect of soil salinity on the composition of oil and amino acid and on the oil content of sunflower seed. pp.71-76.  
*Soil salinity / Sodic soils / Waterlogging / Pakistan*  
(Location: PAK Call No: F 490 Record No: PK 2717)
19088. **Muhammad, S.; Amin, M. 1965.** Reclamation of sodic soils with saline irrigation water. *Pakistan Journal of Science*, 17(4):177-182.  
*Salinity / Irrigation water / Soil properties / Sodic soils / Pakistan*  
(Location: PAK Call No: F 484 Record No: PK 2711)
19089. **Neary, P. E.; Storlie, C. A.; Paterson, J. W. 1995.** Fertilization requirements for drip-irrigated bell peppers grown on loamy sand soils. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995*. St. Joseph, MI, USA: ASAE. pp.187-193.  
*Drip irrigation / Crop yield / Fertilizers / Soil texture / Sandy soils / USA / New Jersey*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18845)
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*Drip irrigation / Subsurface irrigation / Potatoes / Crop production / Nitrogen / Fertilizers / Water management / USA*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18921)
19091. **Obreza, T. A.; Pitts, D. J. 1995.** Deficit irrigation of microirrigated tomatoes and citrus on high water table soils. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995*. St. Joseph, MI, USA: ASAE. pp.275-280.  
*Irrigated farming / Small scale systems / Water deficit / Citrus fruits / Tomatoes / Crop yield / Water table / Soil water / USA / Florida*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18859)
19092. **Olufayo, A.; Baldy, C.; Ruelle, P. 1996.** Sorghum yield, water use and canopy temperatures under different levels of irrigation. *Agricultural Water Management*, 30(1):77-90.  
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(Location: HQ Call No: PER Record No: H 18461)
19093. **Onken, A. B.; Segarra, E.; Lyle, W. M. 1995.** Plant and soil analysis, irrigation technology, economics and N use efficiency. In *Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings, March 5-8, 1995, Kansas City, Missouri. Volume II: Nutrients*. St. Joseph, MI, USA: ASAE. pp.151-154.  
*Soil analysis / Fertilizers / Nitrogen / Maize / Crop production / Plant growth / Irrigation water / USA*  
(Location: HQ Call No: 333.91 G000 CLE Record No: H 18777)
19094. **Oron, G.; DeMalach, Y.; Gillerman, L.; David, I. 1995.** Pear response to saline water application under

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*Drip irrigation / Subsurface irrigation / Water quality / Salinity / Horticulture / Crop yield / Israel / Ramat Negev Field Station*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18832)

19095. **Palada, M. C.; Crossman, S. M. A.; Collingwood, C. D. 1995.** Improving vegetable production using microirrigation. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.502-509.

*Drip irrigation / Vegetables / Crop production / Crop yield / Water use efficiency / Soil moisture / USA / Virgin Islands*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18895)

19096. **Parihar, S. S.; Verma, V. K.; Shukla, R. K.; Pandey, D.; Sharma, R. B. 1995.** Response of transplanted rice (*Oryza sativa*) to planting time and irrigation scheduling. Indian Journal of Agronomy, 40(3):402-406.

*Rice / Irrigation scheduling / Plant growth / Crop yield / Clay soils / India*

(Location: HQ Call No: P 4271 Record No: H 18722)

19097. **Parsons, L. R.; Wheaton, T. A. 1995.** Freeze protection of Florida citrus with microsprinkler irrigation. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.25-30.

*Sprinkler irrigation / Citrus fruits / Climate / USA / Florida*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18820)

19098. **Parsons, L. R.; Wheaton, T. A. 1995.** Microsprinklers for citrus - Beating the freeze. Irrigation Journal, 45(6):34-38, 40.

*Sprinkler irrigation / Irrigation equipment / Citrus fruits / Plant protection / USA / Florida*

(Location: HQ Call No: PER Record No: H 17773)

19099. **Parsons, L. R.; Wheaton, T. A.; Cross, P. 1995.** Reclaimed municipal water for citrus irrigation in Florida. In Lamm, F. R. (Ed.), Microirrigation for a changing

world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.262-268.

*Sprinkler irrigation / Effluents / Waste waters / Water quality / Citrus fruits / USA / Florida / Orlando / Orange County*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18857)

19100. **Pasternak, D.; de Malach, Y. 1995.** Irrigation with brackish water under desert conditions X: Irrigation management of tomatoes (*Lycopersicon esculentum* Mills) on desert sand dunes. Agricultural Water Management, 28(2):121-132.

*Irrigation water / Water use / Arid lands / Irrigation management / Tomatoes / Salinity / Water potential / Water stress*

(Location: HQ Call No: PER Record No: H 17717)

19101. **Pasternak, D.; Sagih, M.; DeMalach, Y.; Keren, Y.; Shaffer, A. 1995.** Irrigation with brackish water under desert conditions XI: Salt tolerance in sweet-corn cultivars. Agricultural Water Management, 28(4):325-334.

*Irrigation water / Water quality / Salinity / Maize / Crop yield*

(Location: HQ Call No: PER Record No: H 17777)

19102. **Payne, W. A.; Gerard, B.; Klaij, M. C. 1995.** Subsurface drip irrigation to evaluate transpiration ratios of pearl millet. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.923-931.

*Millets / Crop production / Sandy soils / Water use efficiency / Drip irrigation / Subsurface irrigation / Niger / Sahel*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18965)

19103. **Peralta, R. C.; Gharbi, A.; Willardson, L. S.; Peralta, A. W. 1990.** Optimal conjunctive use of irrigation sources. In Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), Management of farm irrigation systems. St. Joseph, MI, USA: ASAE. pp.427-458.

*Conjunctive use / Groundwater / Surface water / Water management / Simulation models / Optimization / Water law / Water rights / Aquifers / Water quality / Salinity / Sedimentation / Farms / USA*

(Location: HQ Call No: 631.7.8 G000 HOF Record No: H 18314)

19104. **Persson, G. 1995.** Willow stand evapotranspiration simulated for Swedish soils. *Agricultural Water Management*, 28(4):271-293.

*Evapotranspiration / Simulation / Water availability / Groundwater / Soil properties / Soil water relations / Mathematical models / Water balance / Sweden.*

(Location: HQ Call No: PER Record No: H 17774)

19105. **Petillo, M. G. 1995.** Effects of irrigation periods on citrus yield and fruit quality in Uruguay. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.492-496.

*Irrigation effects / Citrus fruits / Crop production / Crop yield / Supplementary irrigation / Uruguay*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18893)

19106. **Phene, C. J.; Ruskin, R. 1995.** Nitrate management with subsurface drip irrigation. In *Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings*, March 5-8, 1995, Kansas City, Missouri. Volume II: Nutrients. St. Joseph, MI, USA: ASAE. pp.159-162.

*Waste waters / Water quality / Drip irrigation / Nitrogen / Percolation / Leaching / Soils / Maize / USA*

(Location: HQ Call No: 333.91 G000 CLE Record No: H 18778)

19107. **Phene, C. J.; Ruskin, R. 1995.** Potential of subsurface drip irrigation for management of nitrate in wastewater. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.155-167.

*Subsurface irrigation / Drip irrigation / Water quality / Waste waters / Water reuse / Leaching / Soil water / Crop production / Fertilizers / Drainage / Maize / Clay soils / Soil texture / Costs / Asia / North Africa*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18841)

19108. **Phene, C. J. 1995.** The sustainability and potential of subsurface drip irrigation. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.359-367.

*Drip irrigation / Subsurface irrigation / Sustainability / Irrigation efficiency / Water use efficiency / Crop production / Fertilizers / USA / California.*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18873)

19109. **Pike, D. R. 1994.** Crop management on a smallholder irrigation scheme. In Thomas, J. A.; Stilwell, W. J. (Eds./Comps.), *Proceedings of the International Workshop on Smallholder Irrigation: Community Participation and Sustainable Development*, Kruger National Park, South Africa, April 1993. Pretoria, South Africa: Water Research Commission. pp.64-74.

*Crop production / Irrigation programs / Sugarcane / Training / Farming systems / Agricultural extension / Farmer participation / South Africa*

(Location: HQ Call No: 631.7.3 G178 THO Record No: H 17762)

19110. **Porter, L. K. 1995.** Irrigated corn N uptake, and NO<sub>3</sub> carryover and leaching. In *Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings*, March 5-8, 1995, Kansas City, Missouri. Volume II: Nutrients. St. Joseph, MI, USA: ASAE. pp.171-174.

*Irrigation water / Crop production / Maize / Percolation / Leaching / Fertilizers / USA*

(Location: HQ Call No: 333.91 G000 CLE Record No: H 18779)

19111. **Pruitt, W. O. 1964.** Procedures for estimating crop water requirements for use in water allocations and for improvement of irrigation efficiency. *Water Resources Center, Annual Progress Report*. 12p.

*Water requirements / Water allocation / Irrigation efficiency / Evapotranspiration / Climate*

(Location: PAK Call No: F 467 Record No: PK 2694)

19112. **Radwan, L. S. 1994.** Farmer use patterns - rational or wasteful? *The News - F.O.P. of IIMI*, January/February(7):37-52.

*Water use / Irrigation canals / Farmers' attitudes / Water management / Efficiency / Water lifting / Water demand / Sudan / Nile Delta / Minoufia Um Aisha Canal*

(Location: HQ Call No: PER Record No: H 19091)

19113. **Ragab, R. 1995.** Thematic paper on theme III: Constraints and applicability of irrigation scheduling under limited water resources, variable rainfall and saline conditions. In *ICID/FAO Workshop "Irrigation Scheduling: From Theory to Practice"*, FAO, Rome, Italy, 12-13 September 1995. 16p.

*Irrigation scheduling / Constraints / Salinity / Rain / Evapotranspiration / Water stress / Irrigation management*

(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 17899)

19114. **Ramirez, J. A.; Finnerty, B. 1996.** CO 2 and temperature effects on evapotranspiration and irrigated agriculture. *Journal of Irrigation and Drainage Engineering*, 122(3):155-163.

*Evapotranspiration / Irrigated farming / Models / Climate / Soil moisture / Crop yield / Potatoes / USA / Colorado / San Luis Valley*

(Location: HQ Call No: PER Record No: H 18466)

19115. **Ramirez, J. A.; Finnerty, B. 1996.** Precipitation and water-table effects on agricultural production and economics. *Journal of Irrigation and Drainage Engineering*, 122(3):164-171.

*Water table / Climate / Soil moisture / Models / Evapotranspiration / Irrigation water / Costs / Potatoes / USA / Colorado / San Luis Valley*

(Location: HQ Call No: PER Record No: H 18467)

19116. **Rao, P. K.; Singh, R. V.; Chauhan, H. S.; Shukla, K. N. 1995.** Field studies of drip and other methods of irrigation on various growth aspects of tomato. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.913-918.

*Tomatoes / Vegetables / Plant growth / Crop production / Irrigation effects / Drip irrigation / Surface irrigation / India / Nantital Tarai*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18963)

19117. **Rao, P. K.; Singh, R. V.; Chauhan, H. S. 1995.** Field studies on drip and other methods of irrigation on yields and water use of tomato. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.919-922.

*Tomatoes / Vegetables / Crop production / Crop yield / Water use / Drip irrigation / Surface irrigation / Irrigation effects / India / Nantital Tarai*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18964)

19118. **Rathore, A. L.; Pal, A. R.; Sahu, R. K.; Chaudhary, J. L. 1996.** On-farm rainwater and crop management for improving productivity of rainfed areas. *Agricultural Water Management*, 31(3):253-267.

*Cropping systems / Crop production / Crop yield / Rice / Rain-fed farming / Farm ponds / Water balance / India / Madhya Pradesh*

(Location: HQ Call No: PER Record No: H 19341)

19119. **Reicosky, D. C.; Lamb, J. A.; Dowdy, R. H. 1995.** Impact of crop water use on groundwater quality. In *Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings*, March 5-8, 1995, Kansas City, Missouri. Volume III: Practices, systems and adoption. St. Joseph, MI, USA: ASAE pp.211-214.

*Groundwater / Water quality / Leaching / Maize / Soybeans / Plant growth / Models / Water use / Irrigation water / Water balance / Evaporation / USA Minnesota / Princeton*

(Location: HQ Call No: 333.91 G000 CLE Record No: H 18795)

19120. **Renfrow, C. 1996.** Arizona growers promoting more drip irrigation. *Irrigation Journal*, 46(4):12-13.

*Drip irrigation / Irrigation efficiency / Water use efficiency / Crop production / USA / Arizona*

(Location: HQ Call No: PER Record No: H 19122)

19121. **Rengasamy, P.; McLeod, A. J.; Ragusa, S. R. 1996.** Effects of dispersible soil clay and algae on seepage prevention from small dams. *Agricultural Water Management*, 29(2):117-127.

*Soil properties / Clay soils / Sodic soils / Dams / Seepage loss / Measurement / Aquatic weeds / Australia*

(Location: HQ Call No: PER Record No: H 17786)

19122. **Richards, A. 1995.** Management strategies for coping with water scarcity: An exploration of issues. Report prepared for a round-table discussion. Strengthening the Planning Sector Project. Ministry of Public Works and Water Resources, Cairo, Egypt. 15p.

*Strategic management / Water scarcity / Irrigation management / Economic aspects / Water users / Farmers / Egypt*

(Location: HQ Call No: P 4184 Record No: H 17932)

19123. **Sachidanand, B.; Verma, O. P.; Yadav, N. S.; Koshta, L. D. 1993.** Effect of irrigation and mulch on the yield of summer mung. *JNKVV Research Journal*, 27(1):16-20.

*Irrigation effects / Crop yield / Soil temperature / Soil water / India / Jabalpur*

(Location: HQ Call No: P 4303 Record No: H 19026)

19124. **Sanghi, N. K. 1995.** Indigenous soil and water conservation practices and their implications on developmental programme in semi-arid tropics of South India. In Japanese Institute of Irrigation and Drainage, Proceedings of the Tokyo Symposium on Sustainable Agriculture and Rural Development: Agriculture for our planet, Tokyo, Japan, 27-29 November 1995. pp.373-386.  
*Water conservation / Soil conservation / Erosion / Runoff / Weirs / Farmer participation / Development policy / Arid lands / Water harvesting / Watershed management / Traditional farming / Bunds / Rain / Conflict / Equity / Groundwater / Wells / India / South India*  
(Location: HQ Call No: 338.1 G000 JAP Record No: H 17998)
19125. **Santos, F. L. 1996.** Quality and maximum profit of industrial tomato as affected by distribution uniformity of drip irrigation system. *Irrigation and Drainage Systems*, 10(3):281-294.  
*Tomatoes / Crop production / Crop yield / Drip irrigation / Portugal*  
(Location: HQ Call No: PER Record No: H 19177)
19126. **Saxton, K. E.; McGuinness, J. L. 1982.** Evapotranspiration. In Haan, C. T.; Johnson, H. P.; Brakensiek, D. L. (Eds.), *Hydrologic modeling of small watersheds*. St. Joseph, MI, USA: ASAE. pp.229-273.  
*Evapotranspiration / Sensitivity analysis / Soil-water-plant relationships / Water stress / Soil water / Evaporation*  
(Location: HQ Call No: 551.48 G000 HAA Record No: H 19040)
19127. **Sepaskhah, A. R.; Ilampour, S. 1995.** Effects of soil moisture stress on evapotranspiration partitioning. *Agricultural Water Management*, 28(4):311-323.  
*Soil moisture / Evapotranspiration / Cowpeas / Evaporation / Lysimetry / Sprinkler irrigation / Water balance / Iran*  
(Location: HQ Call No: PER Record No: H 17776)
19128. **Sharma, D.P.; Rao, K.V.G.K.; Singh, K.N.; Kumbhare, P.S. 1995.** Recycling of drainage effluent for irrigation. In Rao, K. V. G. K.; Agarwal, M. C.; Singh, O. P.; Oosterbaan, R. J. (Eds.), *Reclamation and management of waterlogged saline soils: National Seminar Proceedings*, April 5 to 8, 1994. Karnal, India; Hisar, India: Central Soil Salinity Research Institute; CCS Haryana Agricultural University. pp.189-204.  
*Recycling / Subsurface drainage / Effluents / Water quality / Irrigation water / Crop production / Crop yield / Soil salinity / Sodic soils / Drainage / Water reuse / Constraints / India / Haryana*  
(Location: HQ Call No: 631.4 G635 RAO Record No: H 19001)
19129. **Sijali, I. V.; Kiome, R. L. M. 1995.** Soil and water management in arid and semi-arid areas of Kenya with special reference to irrigation and water harvesting. In Japanese Institute of Irrigation and Drainage, Proceedings of the Tokyo Symposium on Sustainable Agriculture and Rural Development: Agriculture for our planet, Tokyo, Japan, 27-29 November 1995. pp.361-371.  
*Soil management / Water management / Arid lands / Water harvesting / Irrigation programs / Crop production / Tillage / Irrigated farming / Case studies / Kenya*  
(Location: HQ Call No: 338.1 G000 JAP Record No: H 17997)
19130. **Silva, W. L. C.; Marouelli, W. A. 1995.** Exploratory studies on microirrigation for processing tomatoes in Central Brazil. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.904-908.  
*Sprinkler irrigation / Drip irrigation / Vegetables / Tomatoes / Crop yield / Brazil*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18961)
19131. **Singh, K. L.; Chauhan, H. S.; Singh, K. K.; Ram, S. 1995.** Response of brinjal (*Solanum melongena* L.) under microsprinkler and other methods of irrigation. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.909-912.  
*Vegetables / Crop production / Crop yield / Irrigation effects / Sprinkler irrigation / Drip irrigation / Surface irrigation / Water use efficiency / India*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18962)
19132. **Singh, K. N.; Sharma, D. P. 1995.** Crop production in saline soils under reclamation. In Rao, K. V. G. K.; Agarwal, M. C.; Singh, O. P.; Oosterbaan, R. J. (Eds.), *Reclamation and management of waterlogged saline soils: National Seminar Proceedings*, April 5 to 8, 1994. Karnal, India; Hisar, India: Central Soil Salinity Research Institute; CCS Haryana Agricultural University. pp.430-437.  
*Soil salinity / Crop production / Plant growth / Crop yield / Irrigation water / India*  
(Location: HQ Call No: 631.4 G635 RAO Record No: H 19014)
19133. **Sinha, T. S. 1995.** Tolerance of crops to saline environment and selections aspect. In Rao, K. V. G. K.; Agarwal, M. C.; Singh, O. P.; Oosterbaan, R. J. (Eds.), *Reclamation and management of waterlogged saline soils:*

National Seminar Proceedings, April 5 to 8, 1994. Karnal, India; Hisar, India: Central Soil Salinity Research Institute; CCS Haryana Agricultural University. pp.423-429.

*Soil salinity / Crop production / Plant growth / Irrigation water / Water quality / Drainage / Salinity*

(Location: HQ Call No: 631.4 G635 RAO Record No: H 19013)

19134. **Siyag, R. S. 1995.** Salinisation of soil and yield of crops in relation to crop rotations and conjunctive use of canal water and saline water. In Rao, K. V. G. K.; Agarwal, M. C.; Singh, O. P.; Oosterbaan, R. J. (Eds.), Reclamation and management of waterlogged saline soils: National Seminar Proceedings, April 5 to 8, 1994. Karnal, India; Hisar, India: Central Soil Salinity Research Institute; CCS Haryana Agricultural University. pp.205-212.

*Soil salinity / Crop yield / Cropping systems / Cotton / Millets / Water quality / Salinity / Irrigation water / India*

(Location: HQ Call No: 631.4 G635 RAO Record No: H 19002)

19135. **Smucker, A. J. M.; Richner, W.; Snow, V. O. 1995.** Bypass flow via root-induced macropores (RIMS) in subirrigated agriculture. In Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings, March 5-8, 1995, Kansas City, Missouri. Volume III: Practices, systems and adoption. St. Joseph, MI, USA: ASAE. pp.255-258.

*Irrigated farming / Groundwater / Water quality / Soil properties / Soil water movement / Maize / USA / Michigan*

(Location: HQ Call No: 333.91 G000 CLE Record No: H 18796)

19136. **Srivastava, P.; Chauhan, H. S. 1995.** Effect of microsprinkler and other irrigation methods on cabbage. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.899-903.

*Vegetables / Crop production / Water requirements / Irrigation effects / Sprinkler irrigation / Drip irrigation / Surface irrigation / Water use efficiency / Crop yield / India / Pantnagar*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18960)

19137. **Stanley, C. D.; Clark, G. A. 1995.** Non-traditional use of microirrigation tubing for water quality protection. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando,

Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.49-53.

*Subsurface irrigation / Water table / Fertilizers / Leaching / Water quality / Tomatoes / Crop yield / USA / Florida*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18824)

19138. **Stone, L. R.; Schlegel, A. J.; Gwin, R. E.; Khan, A. H. 1996.** Response of corn, grain sorghum, and sunflower to irrigation in the high plains of Kansas. *Agricultural Water Management*, 30(3):251-259.

*Maize / Sunflowers / Sorghum / Irrigation effects / Crop yield / Water requirements / Water use efficiency / Evapotranspiration / USA / Kansas*

(Location: HQ Call No: PER Record No: H 18548)

19139. **Storlie, C. A. 1995.** Lysimeter-based crop coefficients for highbush blueberries. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.414-419.

*Drip irrigation / Evapotranspiration / Lysimetry / Measurement / Crop production / Water requirements / Water use / USA / New Jersey*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18880)

19140. **Swan, J. B.; Jaynes, D. B. 1995.** Measurement and modeling soil water and solute movement in a ridge-till system. In Clean water - Clean environment - 21st century: Team agriculture - Working to protect water resources: Conference proceedings, March 5-8, 1995, Kansas City, Missouri. Volume III: Practices, systems and adoption. St. Joseph, MI, USA: ASAE. pp.279-282.

*Soil water movement / Models / Measurement / Leaching / Nitrogen / USA / Iowa*

(Location: HQ Call No: 333.91 G000 CLE Record No: H 18797)

19141. **Swarup, A. 1995.** Nutrient management for sustainable crop production on saline soils under subsurface drainage system. In Rao, K. V. G. K.; Agarwal, M. C.; Singh, O. P.; Oosterbaan, R. J. (Eds.), Reclamation and management of waterlogged saline soils: National Seminar Proceedings, April 5 to 8, 1994. Karnal, India; Hisar, India: Central Soil Salinity Research Institute; CCS Haryana Agricultural University. pp.438-448.

*Crop production / Sustainability / Nutrition / Nitrogen / Fertilizers / Wheat / Millets / Soil salinity / Subsurface drainage / India*

(Location: HQ Call No: 631.4 G635 RAO Record No: H 19015)

19142. **Swietlik, D. 1995.** Minimizing nitrate leaching in citrus orchards with low volume irrigation. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.955-960.

*Drip irrigation / Flood irrigation / Citrus fruits / Fertilizers / Nitrogen / Leaching / USA / Texas / Lower Rio Grande Valley*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18970)

19143. **Tabuchi, T. 1995.** Rice cultivation on Po river irrigation system in Italy. In Tabuchi, T.; Hasegawa, S. (Eds), *Rice cultivation in the world*. Tokyo, Japan: Japanese Society of Irrigation, Drainage and Reclamation Engineering. pp.97-102.

*Rice / River basins / Irrigation systems / Irrigation water / Water management / Italy*

(Location: HQ Call No: 633.18 G000 TAB Record No: H 18095)

19144. **Tarjuelo, J.M.; de Juan, J.A.; Valiente, M.; Garcéa, P. 1996.** Model for optimal cropping patterns within the farm based on crop water production functions and irrigation uniformity. II: A case study of irrigation scheduling in Albacete, Spain. *Agricultural Water Management*, 31(1/2):145-163.

*Irrigation scheduling / Case studies / Cropping systems / Models / Farm management / Water requirements / Economic aspects / Spain / Albacete / Castilla-La Mancha*

(Location: HQ Call No: PER Record No: H 18579)

**Abstract:** A model has been developed to determine optimal irrigation strategies for a single season. Application of the model to a case study is presented and then analyzed to illustrate the use of the technique and to develop some general guidelines. The multiple results prove that the normal strategy of adopting a single value to the "gross water depth applied/water depth needed" which depends on the irrigation system is not acceptable. This is because agronomic and economic factors should also be taken into account, plus the volume of available water on the farm and the price per cubic meter of water placed in the field.

19145. **Tedeschi, A.; Hamminga, W.; Postiglione, L.; Menenti, M. 1995.** Sustainable irrigation scheduling: Effects of saline water on soil physical properties. In ICID; FAO, 46th International Executive Council, ICID/FAO Workshop on Irrigation Scheduling: From Theory to Practice, FAO, Rome, Italy, 12-13 September 1995 - Background papers. Rome, Italy: FAO. 18p.

*Irrigation scheduling / Sustainability / Soil salinity / Soil properties / Clay soils / Irrigation water / Irrigation effects / Models / Computer software*

(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 18151)

19146. **Teixeira, J. L.; Fernando, R. M.; Pereira, L. S. 1995.** Irrigation scheduling alternatives for limited water supply and drought. *ICID Journal*, 44(2):73-88.

*Irrigation scheduling / Water supply / Water scarcity / Drought / Simulation models / Maize / Wheat / Case studies*

(Location: HQ Call No: PER Record No: H 18369)

19147. **Thayer, S. S. 1995.** Tree-clip development in microirrigation allows easy frost and freeze protection. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.975-978.

*Irrigation equipment / Irrigation systems / Small scale systems / Citrus fruits / Crop production / USA / Florida*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18973)

19148. **Thompson, W. 1996.** Southern California farmers: Pros at conserving water. *Irrigation Journal*, 46(3):20, 22.

*Water use efficiency / Water conservation / Water requirements / Irrigated farming / Information systems / USA / California*

(Location: HQ Call No: PER Record No: H 18619)

19149. **Thorburn, P. J.; Walker, G. R.; Jolly, I. D. 1995.** Uptake of saline groundwater by plants: An analytical model for semi-arid and arid areas. *Plant and Soil*, 175:1-11.

*Eucalyptus / Groundwater / Salinity / Water quality / Soil-water-plant relationships / Models / Simulation / Water table / Sensitivity analysis / Leaching / Water balance / Australia / Murray River / Chowilla*

(Location: HQ Call No: P 4264 Record No: H 18715)

19150. **Threadgill, E. D.; Eisenhauer, D. E.; Young, J. R.; Bar-Yosef, B. 1990.** Chemigation. In Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), *Management of farm irrigation systems*. St. Joseph, MI, USA: ASAE. pp.749-780.

*Fertilizers / Irrigation systems / Small scale systems / Pumping / Legislation / Calibrations / Water quality / Economic aspects / Chemigation*

(Location: HQ Call No: 631.7.8 G000 HOF Record No: H 18321)

19151. **Trout, T. J.; Sojka, R. E.; Okafor, L. I. 1990.** Soil management. In Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), Management of farm irrigation systems. St. Joseph, MI, USA: ASAE. pp.873-896.

*Soil management / Infiltration / Sprinkler irrigation / Soil texture / Soil temperature / Erosion / Crop production / USA*

(Location: HQ Call No: 631.7.8 G000 HOF Record No: H 18324)

19152. **Tsutsui, H. 1996.** World irrigation VI. Agriculture and irrigation in Japan. Journal of Irrigation Engineering and Rural Planning, 30:7-32.

*Rice / Paddy fields / Flood irrigation / Water balance / Water use / Water management / Drainage / Water loss / Japan*

(Location: HQ Call No: PER Record No: H 18334)

19153. **Umrani, N. K. 1995.** On farm water management studies: Essential to improve water use efficiency. In Indian Society of Water Management, National Symposium on Managing Water Resources for Sustainable Agriculture and Environment, Gujarat Agricultural University, Gujarat, India, October 5-7, 1995: Souvenir. pp.21-22, 24.

*Water management / Farm management / Water use efficiency / India*

(Location: HQ Call No: P 4193 Record No: H 17971)

19154. **Varlev, I.; Dimitrov, P.; Popova, Z. 1995.** Irrigation scheduling with application of "yield-water" relationships. In ICID; FAO, 46th International Executive Council, ICID/FAO Workshop on Irrigation Scheduling: From Theory to Practice, FAO, Rome, Italy, 12-13 September 1995 - Background papers. Rome, Italy: FAO. 12p.

*Irrigation scheduling / Crop yield / Water requirements / Evapotranspiration / Maize / Bulgaria*

(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 18146)

19155. **Vartak, D. R.; Zajicek, J. M.; McFarland, M. J.; Arnold, M. A. 1995.** Chemical root pruning and its effects on water relations and root morphology of Photinia. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.571-578.

*Water use / Crop production / Plant propagation*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18907)

19156. **Walker, S. H. 1994.** Water loss from permanently banded ricefields investigated by field measurement and numerical modelling. Thesis submitted to the Faculty of

Engineering, University of Birmingham, for the degree of Doctor of Philosophy. xviii, 347p.

*Water loss / Water balance / Evapotranspiration / Rice / Paddy fields / Water requirements / Water use / Mathematical models / Measurement / Rainfall-runoff relationships / Water balance / Percolation / Infiltration / Seepage / Groundwater / Aquifers / Water management / Irrigation efficiency / Catchment areas / Indonesia / Java / Sumatra*

(Location: HQ Call No: D 631.7.2 G662 WAL Record No: H 17751)

19157. **Watanabe, T. 1995.** Paddy irrigation and drainage system. In Tabuchi, T.; Hasegawa, S. (Eds), Paddy fields in the world. Tokyo, Japan: Japanese Society of Irrigation, Drainage and Reclamation Engineering. pp.281-302.

*Rice / Irrigation systems / Water distribution / Drainage / Hydrology / Water requirements / Irrigation efficiency / Irrigated farming*

(Location: HQ Call No: 633.18 G000 TAB Record No: H 18101)

19158. **Watanabe, T. 1995.** Reclaimed paddy field in a desert of Kazakhstan: Rice production and induced environmental problems in arid zone. In Tabuchi, T.; Hasegawa, S. (Eds), Paddy fields in the world. Tokyo, Japan: Japanese Society of Irrigation, Drainage and Reclamation Engineering. pp.125-136.

*Rice / Irrigation systems / Arid lands / Land reclamation / Drainage / Kazakhstan*

(Location: HQ Call No: 633.18 G000 TAB Record No: H 18097)

19159. **Weerasinghe, K. D. N.; Chandrasiri, P. A. N.; Rupasinghe, C.; Lexa, J. P. 1996.** Climate soil and water problems encountered in Kiralakele at the down stream of Nilwala Ganga Scheme. OUR Engineering technology, 2(1):28-34.

*Water resources / River basin development / Soil properties / Climate / Irrigation requirements / Drainage / Paddy fields / Rice / Sri Lanka / Nilwala River / Kiralakele*

(Location: HQ Call No: P 4174 Record No: H 17906)

19160. **Weerasinghe, P. 1991.** Response of irrigated lowland rice to addition of N, P and K fertilizers in non-calcic brown soils. Tropical Agriculturist, 147:75-83.

*Crop production / Rice / Crop yield / Nitrogen / Fertilizers / Soil properties / Soil fertility / Field tests / Experiments / Sri Lanka / Aralaganwila*

(Location: HQ Call No: P 4221 Record No: H 18260)

19161. **Wickramaratne, N. 1994.** Practices for year around irrigation in Mahaweli System B. Report, MARD Project, Pimburattewa. 53p.

*Irrigated farming / Water availability / Water use / Irrigation canals / Maintenance / Crop production / Cropping systems / Climate / Soil properties / Drainage / Crops / Diversification / Labor / Rice / Irrigation programs / Sri Lanka / Pimburattewa / Mahaweli Project*

(Location: HQ Call No: P 4170 Record No: H 17881)

19162. **Wijayarathna, C. M.; Weerakoon, W. L. 1996.** Water harvesting and soil and water conservation practices in the dry zone of Sri Lanka. Paper presented to the Consultation on Small Water Harvesting Schemes, organized by the Society for Promotion of Wastelands Development, New Delhi, India, 12 March 1996. 13p.

*Water harvesting / Water conservation / Soil conservation / Tank irrigation / Watersheds / Sri Lanka / Anuradhapura*

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*Soil moisture / Water loss / Evaporation / Crop production / Cereals / Plant growth / Crop yield / Barley / Wheat / Potatoes*

(Location: HQ Call No: PER Record No: H 17723)

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*Sprinkler irrigation / Irrigation systems / Small scale systems / Crop production / Fertilizers / Irrigation design / Irrigation scheduling*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18922)

19165. **Yadav, B. S.; Verma, B. L.; Deo, R. 1995.** Irrigation requirement of wheat under shallow water table condition. *Journal of the Indian Society of Soil Science*, 43(2):259-261.

*Wheat / Irrigation requirements / Water table / India / Jakhrawali / Indira Gandhi Nahar Command*

(Location: HQ Call No: P 4334 Record No: H 19118)

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19169. **Zhang, K.; Dang, Y.; Miao, F. 1995.** Apple coloring and yield studies under micro-sprinkler systems. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.835-839.

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(Location: HQ Call No: 631.7 G000 LAM Record No: H 18950)

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(Location: HQ Call No: 338.1 G000 JAP Record No: H 17984)

19171. **Zoldoske, D. F.; Genito, S.; Jorgensen, G. S. 1995.** Subsurface drip irrigation (SDI) on turfgrass: A University experience. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.300-302.

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19174. **Abernethy, C. L. (Ed.) 1996.** The institutional framework for irrigation: Proceedings of a Workshop, Chiang Mai, Thailand, 1 to 5 November, 1993. Colombo, Sri Lanka: IIMI. vi, 128p.

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19176. **Ahmed, M. A. 1994.** Management and organization in Rahad Agricultural Corporation. *The News - F.O.P. of IIMI*, May/June(9):133-144.

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19177. **Alberts, J.; Vuren, G. V. 1996.** Building sustainable water users associations in NWFP, Pakistan. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: *Sustainability of Irrigated Agriculture - Transactions*, Vol.1.B, Q.46. R.2.06 ... New Delhi, India: ICID. pp.307-328.

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19182. **Atukorala, N. T. 1996.** Integrated river basin management: The Sri Lanka experience. In Regional Seminar on Integrated River Basin Management, 2-5 September, 1996, Malacca, Malaysia: Proceedings vol.2 - Special lectures and country experiences/case studies. Malacca, Malaysia: Malaysian National Committee on Irrigation and Drainage. pp.8/3/1-7.

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19183. **Aziz, Y. A. 1996.** Sustainable irrigated agriculture: The role of farmers' participation in Egypt. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1.B, Q.46. R.2.05 ... New Delhi, India: ICID. pp.287-305.

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19195. Cagil, M. 1995. Irrigation management transfer in Turkey. In Geijer, J. C. M. A. (Ed.), Irrigation management transfer in Asia: Papers from the Expert Consultation on Irrigation Management Transfer in Asia, Bangkok and Chiang Mai, 25-29 September 1995. Bangkok, Thailand: FAO. RAP. pp.181-188.

*Irrigation management / Privatization / Water users' associations / Turkey*

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*Sustainable agriculture / Irrigated farming / Farmers' attitudes / Rice / Agricultural development / Agricultural policy / Malaysia*

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19198. Chasane, S. 1995. Irrigation management transfer in Lao PDR. In Geijer, J. C. M. A. (Ed.), Irrigation management transfer in Asia: Papers from the Expert Consultation on Irrigation Management Transfer in Asia, Bangkok and Chiang Mai, 25-29 September 1995. Bangkok, Thailand: FAO. RAP. pp.135-141.

*Irrigation management / Privatization / Policy / Water users' associations / Laos*

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19200. Chitale, M. A.; Vohra, B. B. 1996. Watershed development and management of SWHS - Perspective of a district collector. In Society for Promotion of Wastelands Development, National consultation on small water harvesting schemes: Proceedings, New Delhi, India, 12 March 1996. pp.17-25.

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*Institution building / Organizational change / Water rights / Irrigation programs / River basin development / Australia / Murray-Darling Basin*  
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*Farmer participation / Farmers' attitudes / Water quality / Models / Incentives / USA*  
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*Irrigation management / Soil degradation / Land ownership / Horticulture / Salinity control / Environmental effects / Farmer participation / Farmers' attitudes / Irrigated farming / Ethnology / Australia / Murray-Darling River basin / Goulburn-Broken catchment*  
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19205. **de Silva, K. W. I.; Alahakoon, A. M. U. B. 1996.** Participatory management and turnover of irrigation systems to Fos: Experiences from Polonnaruwa irrigation systems. In Haq, K.A.; Nandarathna, S.M.K.D. (Eds.), Beneficiary-centered management of irrigation systems: Retrospection on recent endeavors: Proceedings of the workshop held at the Irrigation Department, Colombo, Sri Lanka, 25th May 1995. Colombo, Sri Lanka: IIMI. SLNP; Sri Lanka, Irrigation Department. IRMU. pp.67-69.  
*Participatory management / Irrigation management / History / Privatization / Farmers' associations / Farmer participation / Farmers' attitudes / Farmer-agency interactions / Sri Lanka / Polonnaruwa*  
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19208. **Dolfing, B. 1996.** Eighteenth century water-boards in Holland: Technical, institutional and environmental developments towards sustainability. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1G: History Seminar - 6th seminar on history of irrigation, drainage and flood control with special reference to Egypt - R.16. New Delhi, India: ICID. pp.307-328.  
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19210. **El Quosy, D. E. D.; Nasr, M. L. Y. 1996.** Farmers participation and free cropping pattern. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1.B, Q.46. R.3.06 ... New Delhi, India: ICID. pp.453-463.

*Farmer participation / Cropping systems / Water budget / Water users' associations / Irrigated farming / Farmers' attitudes / Egypt*  
(Location: HQ Call No: ICID 631.7 G000 ICI Record No: H 19538)

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(Location: HQ Call No: ICID 631.7 G000 ICI Record No: H 19532)

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*Water users' associations / Farmers' associations / Farmer participation / Water distribution / Irrigation canals / Irrigation programs / Technology transfer / Farmers' attitudes / Egypt / Nile River*  
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*Food security / Food production / Water availability / Women / Asia*  
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**Abstract:** This paper analyses the extent to which Water Users Associations (WUAs) contribute to increased levels of farmer water control. Drawing extensively on field data collected in command areas rehabilitated by the Egyptian Irrigation Improvement Project (IIP), the author documents key features of the WUA formation process and changes in farmer water control resulting from the main and micro-system improvements. WUA organizational strength is found to play a decisive role in securing farmer water control in situations when main system water supply is unstable. It is

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*Irrigation management / Privatization / Policy / China*  
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*Privatization / Irrigation management / Farmers' associations*

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*Irrigation management / Water users' associations / Farmers' associations / Rural development / Farmer managed irrigation systems / Farmer-agency interactions / France*

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*Farmer participation / Irrigation operation / Irrigation management*

(Location: HQ Call No: PER Record No: H 18075)

19261. **Malik, S. M.; Waheed-uz-Zaman; Kuper, M. 1996.** Farmers' organized behavior in irrigated agriculture in Pakistan's Punjab: A case study of six watercourse command areas in Junejwala Minor, Lower Chenab Canal System. Colombo, Sri Lanka: IIMI. ix, 47p. (IIMI working paper no.39)

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*Water users' associations / Farmer participation / Irrigation management / Tank irrigation / India / Kedar Tank*

(Location: HQ Call No: IIMI 631.7.3 G635 MAR Record No: H 19437)

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*Water users' associations / Farmer participation / Irrigation management / Open channels / Maintenance / Water distribution / Cropping systems / India / Tamil Nadu / Valappur River / Saliperi Village / Mahilancheri Channel / Kudimaramathu*

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(Location: HQ Call No: PER Record No: H 19347)

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*Farmer participation / Irrigation programs / Rural development / Cost benefit analysis / South Africa / Transkei*

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*Water users' associations / Farmer participation / Economic aspects / Irrigation management*

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19269. **Merrey, D. J. 1996.** Institutional contexts for managing irrigated agriculture. In Abernethy, C. L. (Ed.), The institutional framework for irrigation: Proceedings of a Workshop, Chiang Mai, Thailand, 1 to 5 November, 1993. Colombo, Sri Lanka: IIMI. pp.7-22.

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*Farmer managed irrigation systems / Farmers' associations / Water users' associations / Irrigation management / Privatization / Farmer-agency interactions / Institution building / Resource management / Performance / Irrigated farming / Nepal / West Gandak*

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*Water users' associations / Irrigation programs / Irrigation canals / India / Pingot Medium Irrigation Project*

(Location: HQ Call No: IIMI 631.7.3 G635 MIS Record No: H 19457)

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*Irrigation canals / Irrigation management / Water management / Organizational development / Legal aspects / Farmer participation / Farmers' attitudes / Egypt / Fayoum*

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*Irrigation systems / Pipes / Irrigation canals / Water distribution / Flow discharge / Farmer-agency interactions / Irrigation practices / India*

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*systems / Policy / Water users' associations / Irrigation programs / Maintenance / Rivers / Cost recovery / Sustainability / Nigeria / Kano River Irrigation Project*

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*Water users' associations / Low lift irrigation / Irrigation programs / Cooperatives / Sugarcane / India / Kadoli Village*

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*Water users' associations / Farmers' associations / Water distribution / India / Bhavani*

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*Water users' associations / Privatization / Irrigation canals / Maintenance / Water distribution / India / Waghad Dam*

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*Irrigation management / Farmer participation / Legal aspects / Case studies / Morocco / Indonesia / Netherlands*

(Location: HQ Call No: ICID 631.7 G000 ICI Record No: H 19526)

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*Irrigation management / Performance evaluation / Hydraulics / Technology / Organizations / Gravity flow / Irrigation systems*

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(Location: HQ Call No: PER Record No: H 18668)

**Abstract:** This paper describes the application of an economic incentive program to achieve water quality objectives by motivating improvements in farm-level water management practices. The program includes farm-specific water allotments, tiered water pricing, and low interest loans for purchasing irrigation equipment. The implementation of this program in a California water district has resulted in significant reductions in irrigation deliveries and drain water volume. Since the program was implemented, average irrigation depths have declined by 25% on cotton fields, 9% on tomatoes, 10% on cantaloupes, 30% on seed alfalfa, and 29% on grain fields. The average volume of drain water collected each year in subsurface drainage systems has declined from 4.8 million m<sup>3</sup> during 1986 through 1989 to 2.6 million m<sup>3</sup> during 1990 through 1993. These results confirm that economic incentives can be effective in generating improvements in water quality.

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19414. **Barfield, B. J.; Perry, K. B.; Martsof, J. D.; Morrow, C. T. 1990.** Modifying the aerial environment. In Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), Management of farm irrigation systems. St. Joseph, MI, USA: ASAE. pp.827-869.

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(Location: HQ Call No: P 4268 Record No: H 18719)

**Abstract:** In arid and semi-arid regions of the Mediterranean, soil salinity and water logging are the major problems leading to important losses in irrigated agriculture. The scarcity in available fresh water resources, the intention to reduce the share of this source allocated to agriculture and its compensation by using waters of marginal qualities imply the setting of new strategies for a sustainable land and water use in the region. Our knowledge, if appropriately applied, could cope with many of the salinity problems; however, there are many aspects of salinity still misunderstood and which require further technologies to be developed. This review article attempts to analyse the salinity problems in the Mediterranean region as well as the major issues which are relevant to the use and management of saline water focusing on the activities of CIHEAM-MAI Bari in this regard.

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19640. **Chulajata, R.; Kamolratana, C.; Hungspreug, S.; Hungspreug, N. 1996.** Master planning of water resources development in Thailand (1994-2006) In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1C, Q.47: R.1.05 Irrigation planning and management: Measures in harmony with the environment. New Delhi, India: ICID. pp.55-67.  
*Water resources development / Planning / Water policy / Environmental effects / Water quality / Water allocation / Models / Simulation / Thailand*  
(Location: HQ Call No: ICID 631.7 G000 ICI Record No: H 19552)
19641. **Dua, S. K. 1995.** The future of microirrigation. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.341-346.  
*Irrigation practices / Small scale systems / Evaluation / Water conservation / Crops / India*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18870)
19642. **Dukhovny, V.; Sokolov, V. 1996.** The basic idea and principles of water strategy for Aral sea basin. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1C, Q.47: R.1.09 Irrigation planning and management: Measures in harmony with the environment. New Delhi, India: ICID. pp.105-115.  
*Irrigation management / Water resource management / Strategy planning / Social aspects / Economic aspects / Water supply / Water policy / Central Asia / Aral Sea basin*  
(Location: HQ Call No: ICID 631.7 G000 ICI Record No: H 9188)
19643. **Early, A. C. 1990.** Irrigation management in the Poudre Valley of Northern Colorado. In Hoffman, G. J.; Howell, T. A.; Solomon, K. H. (Eds.), Management of farm irrigation systems. St. Joseph, MI, USA: ASAE. pp.985-1015.  
*Irrigation management / Institutions / Public sector / Private sector / Decision making / Conflict / Water distribution / Water use / Farmer participation / USA / Northern Colorado / Poudre Valley*  
(Location: HQ Call No: 631.7.8 G000 HOF Record No: H 18331)
19644. **Elshorbagy, A.; Sharifi, A. 1996.** Environment-oriented water related projects appraisal. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1C, Q.47: R.1.03 Irrigation planning and management: Measures in harmony with the environment. New Delhi, India: ICID. pp.29-40.  
*Water resource management / Strategy planning / Decision support tools / Environmental effects / Irrigation water / Watersheds / Evaluation / Sensitivity analysis / Case studies / Thailand / Rayong Province / Prasae Watershed*  
(Location: HQ Call No: ICID 631.7 G000 ICI Record No: H 19550)
19645. **Escontria, M. C. 1993.** Irrigation in semi-arid zones in Mexico. In German Association for Water Resources and Land Improvement, Ecologically sound resources management in irrigation. Hamburg, Germany: Verlag Paul Parey. pp.105-112.  
*Irrigation management / Arid zones / Agricultural policy / Privatization / Water users' associations / Decentralization / Mexico*  
(Location: HQ Call No: 631.7.5 G000 GER Record No: H 19326)
19646. **Farley, P. J.; Simon, B. M. 1996.** Privatizing government irrigation projects in New Zealand. Water Resources Bulletin, 32(3):585-594.  
*Irrigation management / Privatization / Irrigation programs / Water policy / Water rights / New Zealand*  
(Location: HQ Call No: PER Record No: H 19141)
19647. **Garbrecht, G. 1996.** Historical water storage for irrigation in the Fayum depression (Egypt) Irrigation and Drainage Systems, 10(1):47-76.

*Water management / History / Irrigation management / Water storage / Dams / Egypt / Nile River / Fayum*

(Location: HQ Call No: PER Record No: H 18183)

19648. **Garcés, C. 1995.** Impacto de la transferencia sobre el manejo de los sistemas de riego: La experiencia global del IIMI. [Impact of irrigation management transfer on irrigation systems: IIMI's global experience] Paper presented at IMT Seminar, Riobamba, Ecuador, 13-17 November 1995. 21p.

*Privatization / Irrigation management / Irrigation systems*

(Location: HQ Call No: IIMI 631.7.8 G000 GAR Record No: H 19020)

Note: Annex 6 of 7.

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*Irrigation management / Privatization / Farmer participation / Irrigated farming / Asia / Indonesia*

(Location: HQ, PAK Call No: IIMI 631.7.8 G570 GEI Record No: H 18074)

19650. **German Foundation for International Development; IIMI; Lao P.D.R. Ministry of Agriculture and Forestry. Department of Irrigation. 1995.** Dialogue and training in management of irrigated agriculture: Proceedings of a Workshop held at Luang Prabang, Lao P.D.R., 9-13 January 1995. Workshop proceedings. v.p.

*Irrigation management / Training / Human resource development / Performance evaluation / Laos / Cambodia / Vietnam*

(Location: HQ Call No: IIMI 631.7.8 G708 GER Record No: H 17937)

19651. **German Foundation for International Development; IIMI; Vietnam. Department of Irrigation. 1995.** Dialogue and training in management of irrigated agriculture: Proceedings of a Workshop held at Bai Chay, Quang Ninh Province, Vietnam, 9-13 October 1995. Workshop proceedings. 36p. + annexes.

*Training / Irrigation management / Irrigated farming / Vietnam*

(Location: HQ Call No: IIMI 631.7.8 G784 GER Record No: H 18558)

19652. **Gideon, C; Saeed, A. B.; Mohammed, H. I. 1994.** Major canal performance evaluation of Rahad Irrigated Scheme. The News - F.O.P. of IIMI, May/June(9):11-31.

*Irrigation programs / Irrigation canals / Water delivery performance / Performance evaluation / Performance indexes / Irrigation management / Irrigation scheduling / Irrigation efficiency / Sudan / Rahad*

(Location: HQ Call No: PER Record No: H 19096)

19653. **Gowing, J.; Tarimo, A.; El-Awad, O. 1996.** A rational method for assessing irrigation performance at farm level with the aid of fuzzy set theory. *Irrigation and Drainage Systems*, 10(4):319-330.

*Irrigation management / Irrigation programs / Performance evaluation / Farmers' attitudes / Case studies / Sudan / Tanzania / Gezira Scheme / Usangu Village*

(Location: HQ Call No: PER Record No: H 19346)

19654. **Haj, A. 1996.** Le role de l'irrigation au Maroc: Gestion durable de l'eau. [Role of irrigation in Morocco: Sustainable water] In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1E, Special session: The future of irrigation under increased demand from competitive uses of water and greater needs for food supply - R.5; Symposium: Management Information Systems in irrigation and drainage. New Delhi, India: ICID. pp.59-106.

*Water management / Planning / Sustainability / Irrigation programs / Morocco*

(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19576)

19655. **Haq, K. A.; Samarasekera, B. M. S. (Eds.) 1996.** Summaries of papers presented at the IRMU seminar series. Colombo, Sri Lanka: IIMI. SLNP; Sri Lanka, Irrigation Department. IRMU. v, 23p.

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(Location: HQ Call No: IIMI 631.7.8 G744 HAQ Record No: H 19133)

19656. **Hoat, N. C. 1995.** A speech delivered at the Workshop on "Dialogue and Training in Irrigation Management in Vietnam" In German Foundation for International Development; IIMI; Vietnam. Department of Irrigation. Dialogue and training in management of irrigated agriculture: Proceedings of a Workshop held at Bai Chay, Quang Ninh Province, Vietnam, 9-13 October 1995. pp.6-9.

- Irrigation management / Training / Water resources development / Water resource management / Vietnam*  
(Location: HQ Call No: IIMI 631.7.8 G784 GER Record No: H 18559)
19657. **Hoffman, G. J.; Howell, T. A.; Solomon, K. H.** (Eds.) 1990. Management of farm irrigation systems. St. Joseph, MI, USA: ASAE. xii, 1040p. (ASAE monograph no.9)  
*Irrigation management / Irrigated farming / Economic aspects / Irrigation efficiency / Irrigation scheduling / Conjunctive use / Irrigable land / Farmer managed irrigation systems / Soil-water-plant relationships / Evapotranspiration / Models / Plant growth / Crop yield / Irrigation requirements / Irrigation systems / Control systems / Water measurement / Salinity control / Water table / Groundwater management / Environmental effects / Soil management / Information systems / Chemigation / Australia / Pakistan / Nepal / USA*  
(Location: HQ Call No: 631.7.8 G000 HOF Record No: H 18303)
19658. **Holsambre, D. G.** 1995. Status of drip irrigation systems in Maharashtra. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.497-501.  
*Drip irrigation / Pumps / Farmers' attitudes / Water availability / India / Maharashtra*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18894)
19659. **Hooja, R.; Kavdia, P. S.** (Eds.) 1994. Planning for sustainability in irrigation command area development and Indira Gandhi Canal Project. Jaipur, India: Rawat Publications. 328p.  
*Irrigation programs / Irrigation canals / Sustainability / India / Indira Gandhi Canal Project*  
(Location: ICID Record No: 27107)
19660. **IIMI; SLFO; Sri Lanka. Irrigation Department. IRMU.** 1995. Completion report on the training program on rapid appraisal of irrigation systems for rehabilitation and modernization. Colombo, Sri Lanka: IIMI. 43p.  
*Training courses / Rapid rural appraisal / Tank irrigation / Project appraisal / Rehabilitation / Modernization / Irrigation management / Irrigated farming / Farm management / Farmers' associations / Sri Lanka / Mahasiyambalangamuwa*  
(Location: HQ Call No: IIMI 631.7.8 G744 IIM Record No: PK 719)
19661. **IIMI. Burkina Faso.** 1996. Analysis and improvement of small scale reservoir based village irrigation schemes: A note on the IIMI-Burkina Faso Country Project. Unpublished project report, IIMI, Burkina Faso. 12p.  
*Irrigation programs / Villages / Reservoirs / Small scale systems / Irrigation management / Project appraisal / Burkina Faso*  
(Location: HQ Call No: IIMI 631.7.8 G226 IIM Record No: H 19068)
19662. **India. Ministry of Water Resources. CAD Division.** 1996. Evaluation of command area development in Sharda Canal Project, Uttar Pradesh. Vadodara, India: Operations Research Group. v.p.  
*Irrigation canals / Irrigation programs / Performance evaluation / India / Uttar Pradesh*  
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19663. **International Cooperation for Development and Solidarity.** 1994. Establishing a district team for participatory irrigation development: Micro-Project V-132 Bach Thong District, Bac Thai Province Vietnam. Unpublished report. 19p. + annexes.  
*Irrigation management / Farmer participation / Participatory rural appraisal / Training / Vietnam*  
(Location: HQ Call No: P 4198 Record No: H 18211)
19664. **Ireson, W. R.** 1995. Village irrigation in Laos: Traditional patterns of common property resource management. Society and Natural Resources, 8:541-558.  
*Irrigation management / Communal irrigation systems / Common property / Public ownership / Villages / Rural economy / Natural resources / Resource management / Households / Laos*  
(Location: HQ Call No: P 4267 Record No: H 18718)
19665. **Jamison, W.; Schaack, J.; Weigel, J.** 1996. Conceptual plan for the Turtle Lake irrigation and wildlife area. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1E, Special session: The future of irrigation under increased demand from competitive uses of water and greater needs for food supply - R.3; Symposium: Management Information Systems in irrigation and drainage. New Delhi, India: ICID. pp.29-41.  
*Water management / Irrigated farming / Project planning / USA / North Dakota / McLean County / Turtle Lake*  
(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19574)
19666. **Jeznach, J.; Pierzgalski, E.; Haman, D.** 1995. Review of development of microirrigation in Poland. In

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*Drip irrigation / Climate / Hydrology / Design criteria / Evaluation / Poland*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18869)

19667. Johnson, W. R.; Pattison, E. 1996. Sustained agriculture in the San Joaquin Valley of California, USA. In Madramootoo, C. A.; Dodds, G. T. (Eds.), Managing environmental changes due to irrigation and drainage: Proceedings of a special workshop: Sustainability of Irrigated Agriculture, 16th ICID Congress, Cairo, Egypt, September 17, 1996. New Delhi, India: ICID. pp.129-143.

*Sustainable agriculture / Irrigation water / Geology / Soils / Dams / Reservoirs / Groundwater / Water quality / Drainage / Pumping / Water rights / Crops / USA / California / San Joaquin Valley / Modesto Irrigation District / Turlock Irrigation District*

(Location: HQ Call No: ICID 631.7.5 G000 MAD Record No: H 19497)

19668. Jones, W. I. 1995. The World Bank and irrigation. Washington, DC, USA: World Bank. xvi, 150p. (A World Bank operations evaluation study)

*Development aid / Development policy / Financing / Development banks / Investment / Irrigation programs / Evaluation / Developing countries / Sustainability*

(Location: HQ Call No: 631.7.8 G000 JON Record No: H 18761)

19669. Joshi, P. K.; Datta, K. K.; Gajja, B. L.; Singh, J. 1995. Saline and waterlogged soils: Impact on agricultural economy and feasibility of reclamation. In Rao, K. V. G. K.; Agarwal, M. C.; Singh, O. P.; Oosterbaan, R. J. (Eds.), Reclamation and management of waterlogged saline soils: National Seminar Proceedings, April 5 to 8, 1994. Karnal, India; Hisar, India: Central Soil Salinity Research Institute; CCS Haryana Agricultural University. pp.384-398.

*Soil salinity / Waterlogging / Soil degradation / Agricultural economics / Irrigation programs / Irrigation effects / Crop yield / Subsurface drainage / Constraints / Farmer participation / Evaluation / Policy / India / Uttar Pradesh / Sharda Sahayak Irrigation Project / Rajasthan / Western Yamuna Canal / Haryana / Bhakara System / Gujarat / Kakrapar Right Bank Canal*

(Location: HQ Call No: 631.4 G635 RAO Record No: H 19010)

19670. Jurriens, R. 1996. Assessing seasonal irrigation service performance. Washington, DC, USA: IFPRI. vii, 71p. (Working papers on irrigation performance 3)

*Irrigation management / Performance evaluation / Performance indexes / Irrigation programs / Irrigation efficiency / Water use / Water delivery / Water distribution / Farmers' attitudes / Case studies / India / Karnataka / Tungabhadra*

(Location: HQ Call No: 631.7.8 G635 JUR Record No: H 18799)

19671. Kasetsart University; ORSTOM. 1996. Agricultural and irrigation patterns in the Central Plain of Thailand: Preliminary analysis and prospects for agricultural research and development. Bangkok, Thailand: DORAS Project. iv, 224p.

*Irrigation programs / Cropping systems / Farming systems / Rice / Crops / Diversification / Agricultural policy / Water use / Water control / Water management / Water distribution / Water delivery / Water quality / Pollution / Farmers' attitudes / Economic aspects / Industrialization / Population / Land tenure / Labor / Social systems / Thailand*

(Location: HQ Call No: 631.7.8 G750 KAS Record No: H 19189)

19672. Keller, A.; Keller, J.; Seckler, D. 1996. Integrated water resource systems: Theory and policy implications. Colombo, Sri Lanka: IIMI. iii, 15p. (IIMI research report 3)

*Water resource management / Water policy / Irrigation efficiency / Water demand / Leaching / Water use efficiency / Water supply / Evapotranspiration / Models / Water conservation*

(Location: HQ Call No: IIMI 631.7.8 G000 KEL Record No: H 18208)

19673. Keller, J.; Keller, A.; Davids, G.; El Kady, M. 1996. Conserving Egypt's Nile waters: An overview of strategies for estimating and capturing potential and waste water conservation savings. Research report, Water Resources Strategic Research Activity, National Water Research Center. Ministry of Public Works and Water Resources, and USAID, Cairo, Egypt. 10p. (WRSR publication series no.23)

*Water management / Water resources / Water conservation / Waste waters / Irrigation water / Rivers / Egypt / Nile River*

(Location: HQ Call No: P 4355 Record No: H 19466)

19674. Lam, W. F. 1996. Improving the performance of small-scale irrigation systems: The effects of technological investments and governance structure on irrigation performance in Nepal. World Development, 24(8):1301-1315.

*Irrigation management / Small scale systems / Technology / Investment / Farmer managed irrigation systems / Farmer participation /*

*Farmers' attitudes / Farmer-agency interactions / Performance evaluation / Nepal*  
(Location: HQ, ODI Call No: PER Record No: H 19045)

19675. **Legoupil, J. C. 1994.** Prospects for farmer management of small irrigation schemes: The West African experience. In Thomas, J. A.; Stilwell, W. J. (Eds./Comps.), Proceedings of the International Workshop on Smallholder Irrigation: Community participation and Sustainable Development, Kruger National Park, South Africa, April 1993. Pretoria, South Africa: Water Research Commission. pp.26-49.

*Irrigation programs / Farmer managed irrigation systems / Small scale systems / Food production / Social development / Economic development / Irrigated farming / Cooperatives / Farmers' associations / Land tenure / Land management / Colonialism / Legislation / West Africa / Burkina Faso / Niger / Sahel*  
(Location: HQ Call No: 631.7.3 G178 THO Record No: H 17760)

19676. **Lenton, R. L.; Garcés-Restrepo, C. 1995.** Institutional, managerial and technological innovation in Latin American irrigation: Relevance to global irrigation improvement. Water Resources Development, 11(4):495-513.

*Irrigation management / Water rights / Water market / Water law / Privatization / Irrigation efficiency / Performance evaluation / Latin America*  
(Location: HQ, ODI Call No: PER Record No: H 17860)

19677. **Lovering, J. 1996.** Irrigation vital for Australia's future. Irrigation Australia, 11(2):23-26.

*Irrigated farming / Water resources / River basins / Policy / Australia / Murray Darling Basin*  
(Location: HQ Call No: PER Record No: H 19383)

*Note:* Keynote address to delegates to Irrigation Australia 96 in Adelaide, as Chairman - Murray Darling Basin Commission.

19678. **Magar, S. S. 1995.** The status of microirrigation in Maharashtra, India. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.452-456.

*Drip irrigation / Crop production / Crop yield / Horticulture / Water use efficiency / Drought / India / Maharashtra*  
(Location: HQ Call No: 631.7 G000 LAM Record No: H 18887)

19679. **Maheswaran, A. 1978.** Evaluation of irrigation projects. Jalavrudhi, 1(1):18-25. Irrigation programs / Evaluation / Irrigation management / Project appraisal / Cost benefit analysis / Sri Lanka

(Location: HQ Call No: P 4258 Record No: H 18581)

19680. **Makadho, J. 1996.** Irrigation timeliness indicators and application in smallholder irrigation systems in Zimbabwe. Irrigation and Drainage Systems, 10(4):367-376.

*Performance indexes / Irrigation water / Small scale systems / Water delivery / Timing / Water management / Zimbabwe*  
(Location: HQ Call No: PER Record No: H 19350)

19681. **Martinez-Beltran, J.; Moreno, F.; Cabrera, F.; Andreu, L.; Vaz, R.; Punter, M. 1996.** Evaluation of the subsurface drainage systems installed in the reclaimed heavy soils of the Guadalquivir marshes (SW Spain) In Vincent, B. (Ed.), 16th ICID Congress: Sustainability of Irrigated Agriculture - Evaluation of the Performance of Subsurface Drainage Systems: Transactions of the Workshop, Cairo, Egypt, 15-22 September 1996. New Delhi, India: ICID. pp.73-83.

*Performance evaluation / Subsurface drainage / Soil properties / Irrigation systems / Water management / Estuaries / Spain / Guadalquivir Marshes*  
(Location: HQ Call No: ICID 631.7.8 G000 VIN Record No: H 19503)

19682. **Mase, T. 1995.** The role of irrigation and drainage in the growth of rural society: From Asian experience. In Japanese Institute of Irrigation and Drainage, Proceedings of the Tokyo Symposium on Sustainable Agriculture and Rural Development: Agriculture for our planet, Tokyo, Japan, 27-29 November 1995. pp.245-260.

*Water resources / Irrigation systems / Small scale systems / Drainage / Rural development / Irrigation programs / Farmer participation / Asia / Japan*  
(Location: HQ Call No: 338.1 G000 JAP Record No: H 17989)

19683. **Meinzen-Dick, R. 1995.** Timeliness of irrigation: Performance indicators and impact on agricultural production in the Sone Irrigation System, Bihar. Irrigation and Drainage Systems, 9(4):371-387.

*Irrigation management / Performance indexes / Agricultural production / Rice / Water delivery / Irrigation canals / Tube wells / Irrigation efficiency / India / Bihar*  
(Location: HQ Call No: PER Record No: H 17893)

*Abstract:* Despite considerable discussion of the importance of timeliness as a key dimension of irrigation performance, few studies have assessed

how well irrigation systems deliver timely water supplies, nor the magnitude of the effect on agricultural production. This paper lays out indicators of timeliness of irrigation supply which distinguish between deliveries which meet crop needs, and surplus water supplies which cannot be used by crops. These indicators are then applied to empirical data from the Sone Irrigation System of Bihar, India. Using these indicators in an analysis of the contribution of irrigation to rice production shows that incorporating measures of timeliness explains much more of the variability in agricultural production than do simple measures of total water applications over a season. Results of production functions show that if water deliveries cannot be matched with crop requirements, they have a negative, rather than a positive, impact on yields. Water scarcity has the greatest adverse impact in production in the middle of the season, while surpluses are most damaging at the beginning and end of the season. Temporal redistribution from surplus periods to times of water scarcity therefore offers considerable scope to increase productivity without increasing water use.

19684. **Meinzen-Dick, R. S. 1989.** Water in a thirsty land: Irrigation development and agrarian structure in South India. Dissertation presented to the Faculty of the Graduate School of Cornell University in partial fulfillment of the requirements for the degree of Doctor of Philosophy. xi, 235p.

*Surface irrigation / Groundwater / Technology / Tank irrigation / Wells / Irrigation effects / Agricultural production / Crop yield / Rice / Agrarian reform / Social structure / Rural sociology / Environmental effects / Drought / Households / Family labor / Employment / India / Tamil Nadu / Arcot*

(Location: HQ Call No: D 631.7.8 G635 MEI Record No: H 18227)

19685. **Metawee, A. F. 1993?** Rules and origins of liberating irrigated agriculture in Egypt. Unpublished report. 33p.

*Irrigated farming / Cropping systems / Water resources / Water demand / Policy / Egypt*

(Location: HQ Call No: P 4205 Record No: H 18243)

19686. **Ministerio de Agricultura Pesca y Alimentacion, Contor Nacional de Tecnologia de Regadios. 1990.** Evaluation de los sistemas de riego del center: Informe tecnico anual. Report of IRYDA. v.p.

*Evaluation / Infiltration*

(Location: PAK Call No: F 457 Record No: PK 2665)

19687. **Mitra, A. K. 1996.** Irrigation sector reforms: Issues and approaches. Economic and Political Weekly, March 30:A31-A37.

*Irrigation management / Performance evaluation / Irrigation efficiency / Water users' associations / Water policy / India*

(Location: HQ, ODI Call No: P 4270 Record No: H 18721)

19688. **Mohile, A. D. 1995.** The two pronged strategy for irrigated agriculture in India. In Japanese Institute of Irrigation and Drainage, Proceedings of the Tokyo Symposium on Sustainable Agriculture and Rural Development: Agriculture for our planet, Tokyo, Japan, 27-29 November 1995. pp.433-440.

*Agricultural development / Irrigation management / Food production / Strategy planning / India*

(Location: HQ Call No: 338.1 G000 JAP Record No: H 18001)

19689. **na Ayudhya, A. S. 1995.** Operation and maintenance of Muang Fai Irrigation System with their mutual aid spirits in North Thailand. In Japanese Institute of Irrigation and Drainage, Proceedings of the Tokyo Symposium on Sustainable Agriculture and Rural Development: Agriculture for our planet, Tokyo, Japan, 27-29 November 1995. pp.343-349.

*Irrigation systems / Small scale systems / Irrigation management / Farmer-agency interactions / Irrigation canals / Maintenance / Farmer participation / Thailand*

(Location: HQ Call No: 338.1 G000 JAP Record No: H 17995)

19690. **Navalawala, B. N. 1995.** Participatory irrigation management in India: Status, issues and approaches. In Geijer, J. C. M. A. (Ed.), Irrigation management transfer in Asia: Papers from the Expert Consultation on Irrigation Management Transfer in Asia, Bangkok and Chiang Mai, 25-29 September 1995. Bangkok, Thailand: FAO. RAP. pp.49-60.

*Irrigation management / Participatory management / Farmer participation / Policy / Legal aspects / Water users' associations / India*

(Location: HQ Call No: IIMI 631.7.3 G570 GEI Record No: H 18030)

19691. **Neville, J.; Burton, M. A. 1993.** Training in environmental awareness in the irrigation and drainage sectors. In German Association for Water Resources and Land Improvement, Ecologically sound resources management in irrigation. Hamburg, Germany: Verlag Paul Parey. pp.235-258.

*Irrigation management / Water resources development / Environmental effects / Drainage / Training / Case studies / Tanzania / Pakistan*

(Location: HQ Call No: 631.7.5 G000 GER Record No: H 19333)

19692. **Nir, D. 1995.** Introduction of pressure irrigation in developing countries. In Lamn, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress*, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.442-445.

*Irrigation systems / Planning / Developing countries*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18885)

19693. **Nishiyama, S.; Kuroda, M. 1995.** Irrigation activities in Bangladesh. In Tabuchi, T.; Hasegawa, S. (Eds), *Paddy fields in the world*. Tokyo, Japan: Japanese Society of Irrigation, Drainage and Reclamation Engineering. pp.11-24.

*Irrigated farming / Cropping systems / Irrigation equipment / Land use / Bangladesh*

(Location: HQ Call No: 633.18 G000 TAB Record No: H 18091)

19694. **Norton, S. W.; Slugget, T. F.; Watson, K. A. 1996.** The integrated approach to irrigation management. *Irrigation Australia*, 11(2):28-32.

*Irrigation management / Irrigated farming / Technology / Education / Training / Australia*

(Location: HQ Call No: PER Record No: H 19384)

19695. **Paul, S. 1994.** Does voice matter?: A study of the impact of voice on public accountability. Unpublished report. 66p.

*Irrigation management / Water management / Administration / Public sector / Local government / Performance evaluation / Water users' associations / Farmer participation / Farmers' associations / Farmer-agency interactions / Farmers' attitudes / Communication / Villages / Research methods / Irrigation canals / Indicators / Policy / Indonesia*

(Location: HQ Call No: P 4147 Record No: H 17835)

19696. **Pereira, L. S.; Gilley, J. R.; Jensen, M. E. 1996.** Research agenda on sustainability of irrigated agriculture. *Journal of Irrigation and Drainage Engineering*, 122(3):172-177.

*Sustainable agriculture / Irrigated farming / Water use / Research priorities / Priority setting*

(Location: HQ Call No: PER Record No: H 18468)

19697. **Pillai, C. R. S.; Raju, K. S. 1996.** Ranking irrigation management alternatives by multicriterion analysis. *Water Resources Development*, 12(3):329-345.

*Irrigation management / Performance evaluation / Strategy planning / Decision making / Policy*

*making / Sensitivity analysis / Case studies / India / Andhra Pradesh / Sri Ram Sagar Project*

(Location: HQ Call No: PER Record No: H 19182)

19698. **Plusquellec, H. 1996.** Guilan, a successful irrigation project in Iran. *Irrigation and Drainage Systems*, 10(2):95-107.

*Irrigation programs / Project appraisal / Performance / Dams / Water balance / Rapid methods / Percolation / Rice / Iran / Middle East / Guilan*

(Location: HQ Call No: PER Record No: H 18666)

**Abstract:** This rapid appraisal study compares the actual and projected performance of a large, rice monoculture irrigation project in the humid climate of the Caspian Sea in Iran. The uniqueness of this project is the co-existence of East-Asia rice farming techniques with advanced technologies of automatic water control found generally in the Mediterranean countries. The paper emphasizes the need to do field tests at the design stage in order to make realistic assumptions on water efficiency and deep percolation. The study confirms that the advanced water control technologies are appropriate for small farm irrigation projects in the humid tropics, a conclusion often debated among experts. The Guilan project now provides some evidence to support that conclusion.

19699. **Plusquellec, H. 1995.** The Guilan Project, Iran. *Grid*, 7:7-8.

*Irrigation programs / Irrigated farming / Irrigation canals / Water control / Project appraisal / Iran*

(Location: HQ Call No: P 2472 Record No: H 18350)

19700. **Purcell, R. 1996.** A call for collaboration: Research project on modern water control and management practices - Evaluating the impact on irrigation performance. *Grid*, 9:6-7.

*Agricultural research / Water management / Irrigation management / Irrigation programs / Performance evaluation*

(Location: HQ Call No: P 4338 Record No: H 19231)

19701. **Purkey, D. R. 1995.** A strategy for implementing IIMI activities in the Sahelian Region of West Africa. Unpublished report. 6p.

*Irrigation management / Strategy planning / Research institutes / Water management / Soil fertility / River basin development / West Africa / AfricaSouth of Sahara / Sahel / Senegal River / Kano River*

(Location: HQ Call No: IIMI 631.7.8 G190 PUR Record No: H 19144)

19702. Rao, K. V. G. K.; Sharma, D. P.; Kamra, S. K.; Kaledhonkar, M. J. 1996. Performance evaluation of subsurface drainage for soil salinity control. In Vincent, B. (Ed.), 16th ICID Congress: Sustainability of Irrigated Agriculture - Evaluation of the Performance of Subsurface Drainage Systems: Transactions of the Workshop, Cairo, Egypt, 15-22 September 1996. New Delhi, India: ICID. pp.35-42.

*Performance evaluation / Subsurface drainage / Soil salinity / Crop production / Economic analysis / India / Haryana / Hisar*

(Location: HQ Call No: ICID 631.7.8 G000 VIN Record No: H 19502)

19703. Rosegrant, M. W.; Perez, N. D. 1995. Water resources development in Africa: A review and synthesis of issues, potentials, and strategies for the future. Washington, DC, USA: IFPRI. 111p.

*Water resources development / Strategy planning / Irrigated farming / Water supply / Water demand / Water policy / Models / Irrigation systems / Investment / Small scale systems / Government managed irrigation systems / Farmer managed irrigation systems / Groundwater irrigation / Modernization Rehabilitation / Cost benefit analysis / Desalinization / Recycling / Waste waters / Water reuse / Water harvesting / Water rights / Water market / Groundwater management / Privatization / Farmer participation / Water use / Environmental sustainability / Africa South of Sahara*

(Location: HQ Call No: P 4316 Record No: H 19065)

19704. Saad, M. B. A.; Farid, M. S. M. 1996. Water resources and demand management in Egypt: Present and future perspectives. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1E, Special session: The future of irrigation under increased demand from competitive uses of water and greater needs for food supply - R.1; Symposium: Management Information Systems in irrigation and drainage. New Delhi, India: ICID. pp.1-16.

*Water resources / Water resource management / Water demand / Water control Groundwater / Aquifers / Water quality / Drainage / Waste waters / Water reuse / Egypt / Nile River / Sinai*

(Location: HQ Call No: ICID 631.7.1 G000 ICI Record No: H 19572)

19705. Saksena, R. S. 1995. Microirrigation in India - Achievement and perspective. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the

Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.353-358.

*Drip irrigation / Sprinkler irrigation / Small scale systems / Farmers' attitudes / Water rates / Cost benefit analysis / India*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18872)

19706. Sally, H.; Ouattara, S.; Keita, A. 1996. Evaluation des performances des petits perimetres irrigues du Burkina Faso. [Performance assessment of small-scale irrigation schemes in Burkina Faso] Paper presented at the National Workshop on Irrigated Agriculture, Ouagadougou, Burkina Faso, 23-25 April 1996. 17p.

*Performance evaluation / Irrigation management / Small scale systems / Burkina Faso*

(Location: HQ Call No: IIMI 631.7.8 G226 SAL Record No: H 9174)

19707. Salomon, M.; Seegers, S. 1995. Rapid Appraisal of Agricultural Knowledge Systems (RAAKS) and its use in irrigation management research: Training workshop report. Report of workshop held at IIMI, Lahore, Pakistan in December 1995. 131p. + annexes.

*Irrigation management / Research / Pakistan*

(Location: PAK Call No: IIMI PK-5 G730 SAL Record No: PK 436)

19708. Sampath, R. K.; Young, R. A. (Eds.) 1990. Social, economic, and institutional issues in third world irrigation management. Boulder, CO, USA: Westview Press. xix, 477p. (Studies in water policy and management, no.15)

*Irrigation management / Social aspects / Institution building / Economic aspects / Developing countries*

(Location: HQ, PAK Call No: 631.7.8 G000 SAM Record No: PK 243)

19709. Sewrajsing, I.; Brahmana, D.; Yunan, S. 1990. A training and development methodology, approach and scope for sustained water management improvement in small scale irrigation systems. Paper presented at Regional Workshop on Improved Irrigation System Performance for Sustainable Agriculture, Bangkok, Thailand, 22-26 October 1990. 25p. + appendices. (FAO doc.no.TD7)

*Small scale systems / Training / Water management / Sustainability / Irrigation systems / Water resources / Cropping systems / Farmers*

(Location: PAK Call No: F 466 Record No: PK 2693)

19710. Sharma, K. R. 1996. Sustainability of three types of small-scale irrigation improvements in Nepal. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1A, Q.46.R.1.11 - Farmers' participation to-

wards sustainable irrigated agriculture. New Delhi, India: ICID. pp.127-145.

*Farmer managed irrigation systems / Small scale systems / Sustainability / Farmer participation / Water users' associations / Irrigation programs / Performance evaluation / Nepal*

(Location: HQ Call No: ICID 631.7.3 G000 ICI Record No: H 19520)

19711. **Shumba, E. M.; Maposa, R. 1996.** An evaluation of the performance of six smallholder irrigation schemes in Zimbabwe. *Irrigation and Drainage Systems*, 10(4):355-366.

*Irrigation programs / Performance evaluation / Crop production / Maize / Beans (phaseolus) / Marketing / Constraints / Small scale systems / Crop yield / Zimbabwe*

(Location: HQ Call No: PER Record No: H 19349)

19712. **Singh, J.; Singh, A. K.; Garg, R. 1995.** Scope and potential of drip and sprinkler irrigation systems in Rajasthan, India. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995.* St. Joseph, MI, USA: ASAE. pp.457-463.

*Drip irrigation / Sprinkler irrigation / Arid lands / Statistics / India / Rajasthan*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18888)

19713. **Smedema, L. K.; Abdel Dayem, S. M.; Vlotman, W. F.; Abdel Aziz, A.; van Leeuwen, H. 1996.** Performance assessment of land drainage systems. In Vincent, B. (Ed.), *16th ICID Congress: Sustainability of Irrigated Agriculture - Evaluation of the Performance of Subsurface Drainage Systems: Transactions of the Workshop, Cairo, Egypt, 15-22 September 1996.* New Delhi, India: ICID. pp.3-16.

*Performance evaluation / Drainage / Irrigation operation / Monitoring / Performance indexes*

(Location: HQ Call No: ICID 631.7.8 G000 VIN Record No: H 19500)

19714. **Sohrabi, T. M.; Keshavarz, A. 1996.** Performance evaluation of farmer-managed irrigation systems in Iran. In ICID, *16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1A, Q.46.R.1.13 - Farmers' participation towards sustainable irrigated agriculture.* New Delhi, India: ICID. pp.167-181.

*Farmer managed irrigation systems / Performance evaluation / Furrow irrigation / Irrigation efficiency / Measurement / Irrigation water / Infiltration / Soil moisture / Soil properties / Irrigated farming / Iran*

(Location: HQ Call No: ICID 631.7.3 G000 ICI Record No: H 19521)

19715. **Somasiri, S. 1991.** Irrigation potential of minor tanks and their agricultural stability. *Tropical Agriculturist*, 147:41-58.

*Tank irrigation / Irrigated farming / Irrigation requirements / Water conservation / Water supply / Rain / Water potential / Climate / Catchment areas / Small scale systems / Sri Lanka*

(Location: HQ Call No: P 4220 Record No: H 18259)

19716. **Somasundaram, M. V.; Duraisaminathan, V.; Pundarikanthan, N. V. 1995.** Present status of microirrigation in Tamil Nadu, India. In Lamm, F. R. (Ed.), *Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995.* St. Joseph, MI, USA: ASAE. pp.830-834.

*Drip irrigation / Crop yield / Performance evaluation / Development aid / Small scale systems / India / Tamil Nadu*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18949)

19717. **Srivastava, H. S. 1996.** Managing irrigation project: A study of Chambal Valley Project. Jaipur, India: Rawat Publications. 199p.

*Irrigation management / Irrigation programs / India / Chambal Valley*

(Location: ICID Record No: 27361)

19718. **Sudan. White Nile Agricultural Services Project. 1993.** White Nile Agricultural Services Project: Appraisal report - Annexes. Unpublished report. v.p.

*Water resources Development / Project appraisal / Farming systems / Irrigated farming / Crop production / Horticulture / Livestock / Forestry / Institutions / Organizations / Farmers' associations / Women in development / Agricultural credit / Rural development / Irrigation programs / Rehabilitation / Maintenance / Economic analysis / Sudan / White Nile*

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*Drip irrigation / Crop production / Cost benefit analysis / Agricultural production / Farmers / Water / India*

(Location: HQ Call No: 631.7 G000 LAM Record No: H 18871)

19720. **Sutawan, N. 1995.** Water management system by Subak in Bali. In Japanese Institute of Irrigation and Drainage, Proceedings of the Tokyo Symposium on Sustainable Agriculture and Rural Development: Agriculture for our planet, Tokyo, Japan, 27-29 November 1995. pp.331-341.

*Water management / Irrigation management / Water allocation / Water distribution / Maintenance / Paddy fields / Indonesia / Bali*

(Location: HQ Call No: 338.1 G000 JAP Record No: H 17994)

19721. **Svendsen, M.; Vermillion, D. L. 1996.** Performance impacts of transfer to farmer management in the Columbia basin project, USA. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1A, Q.46.R.1.02 - Farmers' participation towards sustainable irrigated agriculture. New Delhi, India: ICID. pp.9-21.

*Farmer managed irrigation systems / Irrigation management / Performance evaluation / Privatization / USA / Columbia Basin*

(Location: HQ Call No: ICID 631.7.3 G000 ICI Record No: H 9166)

19722. **Swabi Scarp Consultants. 1992.** Appraisal report on possibilities for irrigation development in and around the Ballar area. Report of Swabi Salinity Control and Reclamation Project. v.p. (Working paper no.29)

*Project appraisal / Irrigation management / Surface water / Subsurface drainage / Water distribution / Pakistan / Ballar*

(Location: PAK Call No: 631.7.8 G730 SWA Record No: PK 1408)

19723. **Tanton, T. W.; Rycroft, D. W. 1996.** Monitoring of drainage performance. In Vincent. B. (Ed.), 16th ICID Congress: Sustainability of Irrigated Agriculture - Evaluation of the Performance of Subsurface Drainage Systems: Transactions of the Workshop, Cairo, Egypt, 15-22 September 1996. New Delhi, India: ICID. pp.175-182.

*Salinity control / Drainage / Design / Performance / Monitoring / Irrigable land*

(Location: HQ Call No: ICID 631.7.8 G000 VIN Record No: H 19507)

19724. **Tilakasiri, S. L. 1994.** The impact of irrigation on the evolving pattern of land tenure in irrigated settlements in the North-Central dry zone of Sri Lanka. Thesis submitted to the Faculty of Arts, Department of Geography, University of Peradeniya, in partial fulfillment of the

requirements for the Degree of Doctor of Philosophy. xiv, 275p.

*Irrigation effects / Land tenure / Settlement / Peasant workers / Water management / Villages / Water distribution / Equity / Social aspects / Farmers' attitudes / Case studies / Arid zones / Farming systems / Irrigated farming / Water use / Sri Lanka / Mahaweli Project / Toranegama / Meewellewa*

(Location: HQ Call No: D 631.7.8 G744 TIL Record No: H 17889)

19725. **Turkawi, A. G. 1994.** White Nile Agricultural Services Project: An approach for designing and managing small holder irrigation schemes. The News - F.O.P. of IIMI, July/August(10):69-86.

*Irrigation programs / Irrigation management / Performance evaluation / Monitoring / Cropping systems / Agricultural economics / Farmers' associations / Sudan / White Nile*

(Location: HQ Call No: PER Record No: H 19101)

19726. **Utah State University. Biological and Irrigation Engineering Department. 1995.** Opportunities for improving water management in the Sharkia Command Area. A report submitted to the Planning Studies and Models Component, Irrigation Management Systems Project, Planning Sector, Ministry of Public Works and Water Resources, Government of Egypt and USAID, Cairo, Egypt. vii, 30p.

*Water management / Irrigation management / Irrigation practices / Water allocation / Water distribution / Models / Irrigation canals / Automation / Water demand / Egypt*

(Location: HQ Call No: P 4206 Record No: H 18244)

19727. **van Hofwegen, P.; El Gueddari, A. B.; Chibani, M. 1995.** Policy choices and their impact on the flexibility of on-farm irrigation scheduling in the Triffa Scheme. In ICID; FAO, 46th International Executive Council, ICID/FAO Workshop on Irrigation Scheduling: From Theory to Practice, FAO, Rome, Italy, 12-13 September 1995 - Background papers. Rome, Italy: FAO. 9p.

*Irrigation scheduling / Water delivery / Water policy / Constraints / Irrigation programs / Farmer-agency interactions / Farmer participation / Water users' associations / Irrigation management / Cropping systems / Water allocation / Cost recovery / Morocco*

(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 18162)

19728. **van Steenberg, F. 1995.** Changing irrigation schedules in farmer-managed irrigation systems. In ICID; FAO, 46th International Executive Council, ICID/FAO Workshop on Irrigation Scheduling: From Theory to Prac-

tice, FAO, Rome, Italy, 12-13 September 1995 - Background papers. Rome, Italy: FAO. 10p.

*Irrigation scheduling / Farmer managed irrigation systems / Case studies / Pakistan / Balochistan*  
(Location: HQ Call No: 631.7.1 G000 ICI Record No: H 18159)

19729. **Verhaeghe, R. J.; van der Krogt. 1996.** Estimation of demands and balancing of resources at basin level. In ICID, 16th Congress on Irrigation and Drainage, Cairo, Egypt, 1996: Sustainability of Irrigated Agriculture - Transactions, Vol.1C, Q.47: R.1.07 Irrigation planning and management: Measures in harmony with the environment. New Delhi, India: ICID. pp.77-94.

*Water scarcity / Irrigation management / Water management / Sustainability / Water resources development / Environmental effects / Water demand / River basins / Computer techniques / Planning / Water balance / Models*  
(Location: HQ Call No: ICID 631.7 G000 ICI Record No: H 9187)

19730. **Vermillion, D. L.; Murray-Rust, H. 1995.** Enhancing the manageability of rotational irrigation in Indonesia: A pilot experiment in West Java. Colombo, Sri Lanka: IIMI. xii, 41p. (Working paper no.36)

*Rotation / Irrigation scheduling / Irrigation systems / Water distribution / Weirs / Cropping systems / Crop-based irrigation / Indonesia / West Java / Cirebon*  
(Location: PAK Call No: IIMI 631.7.8 G662 VER Record No: PK 543)

19731. **Vincent, B. (Ed.) 1996.** 16th ICID Congress: Sustainability of Irrigated Agriculture - Evaluation of the Performance of Subsurface Drainage Systems: Transactions of the Workshop, Cairo, Egypt, 15-22 September 1996. New Delhi, India: ICID. 260p.

*Subsurface drainage / Performance evaluation / Performance indexes / Monitoring / Case studies / Rehabilitation / Soil salinity / Salinity control / Remote sensing / Pipes*  
(Location: HQ Call No: ICID 631.7.8 G000 VIN Record No: H 19499)

19732. **Vinh, T. S. 1995.** Irrigation management transfer in Vietnam. In Geijer, J. C. M. A. (Ed.), Irrigation management transfer in Asia: Papers from the Expert Consultation on Irrigation Management Transfer in Asia, Bangkok and Chiang Mai, 25-29 September 1995. Bangkok, Thailand: FAO. RAP. pp.119-126.

*Irrigation management / Privatization / Policy / Vietnam*  
(Location: HQ, PAK Call No: IIMI 631.7.3 G570 GEI Record No: PK 300)

19733. **Weinberg, M.; Kling, C. L. 1996.** Uncoordinated agricultural and environmental policy making: An applica-

tion to irrigated agriculture in the West. American Journal of Agricultural Economics, 78(1):65-78.

*Agricultural policy / Environmental policy / Policy making / Irrigated farming / Water quality / Simulation models / USA / California / San Joaquin Valley*  
(Location: HQ Call No: PER Record No: H 18399)

19734. **Wicke, P. W. 1993.** Irrigation in highlands - Case study Peru. In German Association for Water Resources and Land Improvement, Ecologically sound resources management in irrigation. Hamburg, Germany: Verlag Paul Parey. pp.133-172.

*Irrigation practices / Mountains / Irrigation programs / Case studies / Peasant workers / Irrigation canals / Rehabilitation / Small scale systems Peru / Cusco*  
(Location: HQ Call No: 631.7.5 G000 GER Record No: H 19328)

19735. **Wijesuriya, L. T. 1996.** Irrigation infrastructure for the development of land and water resources in the southern area. In The Institution of Engineers, Sri Lanka, Seminar on "Essential Technical Inputs in the Development of Southern Area," 19 July 1996. pp.56-66.

*Irrigation systems / Infrastructure / Land resources / Water resources development / Climate / Hydrology / River basins / Irrigation practices / Irrigated farming / Sri Lanka / Gin Ganga / Nilwala Ganga / Kirama Oya / Urubokka Oya / Walawe Basin / Kirindi Oya / Lunugamvehera*  
(Location: HQ Call No: P 4339 Record No: H 19268)

19736. **Wolff, P. 1995.** The problem of the sustainability of irrigation systems. Applied Geography and Development, 45/46:55-62.

*Irrigation management / Sustainability / Agriculture / Irrigated farming*  
(Location: HQ Call No: P 4217 Record No: H 18256)

19737. **Wopereis, M.; Sally, H. 1995.** Towards improved and sustainable use of irrigation in the Sahel. Background paper for the Planning Workshop of the CGIAR Inter-Centre Initiative on Water Management, IIMI, Colombo, Sri Lanka, 29 September - 4 October 1995. 14p.

*Irrigation management / Water management / Irrigated farming / Sustainability / Water use efficiency / Water requirements / Cropping systems / Land use / Costs / Simulation models / Policy / Social aspects / Economic aspects / Rice / Salinity / Crop yield / Soil degradation / Environment / Sahel / Sudan / Senegal / Gambia / Mauritania / Mali / Niger Nigeria / Burkina Faso / Cameroon / Chad*

(Location: HQ Call No: IIMI 631.7.8 G152 WOP  
Record No: H 9180)

19738. **World Bank. General Agriculture Division. South Asia Projects Department. 1976.** Pakistan special agriculture sector review - (In five volumes): Volume IV - Annex on rainfed agriculture. Washington, DC, USA: World Bank. 69p. + appendix. (World Bank report no.922a-PAK)

*Water management / Irrigated farming / Watercourses / Pakistan*

(Location: PAK Call No: 631.7.8 G730 WOR  
Record No: PK 232)

19739. **World Bank. General Agriculture Division. South Asia Projects Department. 1976.** Pakistan special agriculture sector review - (In five volumes): Volume II - Irrigation and drainage. Washington, DC, USA: World Bank. v.p. (World Bank report no.922a-PAK)

*Water management / Irrigated farming / Watercourses / Pakistan*

(Location: PAK Call No: 631.7.8 G730 WOR  
Record No: PK 231)

19740. **Yamaji, E.; Anbumozhi, V. 1995.** Paddy field and improvement of irrigation systems in India. In Tabuchi, T.; Hasegawa, S. (Eds), Paddy fields in the world. Tokyo, Japan: Japanese Society of Irrigation, Drainage and Reclamation Engineering. pp.69-80.

*Rice / Irrigation systems / Agricultural production / Canals / India*

(Location: HQ Call No: 633.18 G000 TAB  
Record No: H 18092)

19741. **Yashima, S. 1996.** Assessment of effective rainfall: A case study of the Muda Irrigation Project, Malaysia. *Journal of Irrigation Engineering and Rural Planning*, 30:62-80.

*Irrigation Programs / Performance evaluation / Performance indexes / Rain / Water availability / Case studies / Irrigation management / Rice / Irrigation requirements / Cropping systems / Malaysia*

(Location: HQ Call No: PER Record No: H 18337)

19742. **Yurgalevitch, C. M.; Tenny, L. S.; Ulmer, D. S. 1995.** The current status of microirrigation systems in Dade county. In Lamm, F. R. (Ed.), Microirrigation for a changing world: Conserving resources/preserving the environment: Proceedings of the Fifth International Microirrigation Congress, Hyatt Regency Orlando, Orlando, Florida, April 2-6, 1995. St. Joseph, MI, USA: ASAE. pp.331-335.

*Irrigation systems / Small scale systems / Water conservation / Drip irrigation / Sprinkler irrigation / Performance evaluation / USA / Florida / Dade county*

(Location: HQ Call No: 631.7 G000 LAM Record  
No: H 18868)

19743. **Zhu, Z.; El Kady, M.; Molden, D. 1996.** Drainage reuse and land expansion. Research report, Water Resources Strategic Research Activity, National Water Research Center. Ministry of Public Works and Water Resources, and USAID, Cairo, Egypt. 14p. + appendices. (WRSR publication series no.27)

*Drainage / Water reuse / Land development / Water allocation / Water transfer / Irrigation systems / River basins / Egypt / Nile River*

(Location: HQ Call No: P 4357 Record No: H 19468)

#### 631.8 Agricultural chemicals

19744. **Pipithsangchan, S.; Kanatharana, P.; Siri Wong, C.; Kamnalrut, A.; Chatupote, W. 1996.** Impact of the use of agrochemicals on water resources in Southern Thailand. In Aminuddin, B. Y.; Sharma, M. L.; Willett, I. R. (Eds.), Agricultural impacts on groundwater quality: Proceedings of an international workshop held in Kota Bharu, Kelantan, Malaysia, 24-27 October 1994. Canberra, Australia: ACIAR. pp.71-76.

*Fertilizers / Pesticide residues / Water resources / Water quality / Environmental degradation / Farmers / Health / Thailand*

(Location: HQ Call No: 631.7.6.3 G000 AMI  
Record No: H 19060)

#### 632.58 Weeds

19745. **Brabben, T. 1996.** Developments in aquatic weed control. *Grid*, 8:3.

*Aquatic weeds / Weed control / Environmental control*

(Location: HQ Call No: P 4257 Record No: H 18495)

#### 633.15 Corn

19746. **Dowswell, C. R.; Paliwal, R. L.; Cantrell, R. P. 1996.** Maize in the third world. Boulder, CO, USA: Westview Press. xiii, 268p. (Winrock development-oriented literature series)

*Maize / Agricultural production / Crop production / Plant growth / Research policy / Environmental effects / Developing countries / Case studies / Agricultural economics / Ghana / Zimbabwe / Thailand / China / Guatemala / Brazil*

(Location: HQ Call No: 633.15 G000 DOW  
Record No: H 18614)

**633.18 Rice**

19747. **Hameed, N.D.A.; Amerasinghe, N.; Panditharatna, B.L.; Gunasekera, G. D. A.; Selvadurai, J.; Selvanayaham, S. 1977.** Rice revolution in Sri Lanka. Geneva, Switzerland: United Nations Research Institute for Social Development. x, 282p. (UNRISD report no.76.7)

*Rice / Crop production / Agricultural economics / Agricultural policy / Rural economy / Land tenure / Farm income / Villages / Living standards / Institutions / Cooperatives / Settlement / Agricultural credit / Labor / Cropping systems / Weed control / Sri Lanka / Minipe / Ussapitiya / Polonnoruwa / Palamunai*  
(Location: HQ Call No: 633.18 G744 HAM Record No: H 18190)

19748. **Ingram, K. T. (Ed.) 1995.** Rainfed lowland rice: Agricultural research for high-risk environments. Manila, Philippines: IRRI. ix, 248p.

*Rain-fed farming / Rice / Crop production / Cropping systems / Soil fertility / Agricultural research / Agricultural production / GIS / Environmental effects / Weed control*  
(Location: HQ Call No: 633.18 G000 ING Record No: H 17754)

19749. **Matsuo, T.; Kumazawa, K.; Ishii, R.; Ishihara, K.; Hirata, H. (Eds.) 1995.** Science of the rice plant: Vol. two - Physiology. Tokyo, Japan: Food and Agriculture Policy Research Center. 1240p.

*Rice / Crop production / Plant growth / Plant propagation / Environmental effects / Nutrition / Nitrogen / Water requirements / Drought / Climate / Plant diseases / Pests / Environmental degradation / Soil degradation / Water pollution / Crop yield / Japan*  
(Location: HQ, PAK Call No: 633.18 G000 MAT Record No: PK 2737)

19750. **Roger, P. A. 1996.** Biology and management of the floodwater ecosystem in ricefields. Los Baños, Philippines: IRRI. xv, 250p.

*Rice / Paddy fields / Wetlands / Soil fertility / Flood water / Nitrogen / Weed control / Pests / Waterborne diseases / Disease vectors / Pesticide residues / Fish*  
(Location: HQ Call No: 633.18 G000 ROG Record No: H 18635)

19751. **Setter, T. L.; Ingram, K. T.; Tuong, T. P. 1995.** Environmental characterization requirements for strategic research in rice grown under adverse conditions of drought, flooding, or salinity. In Ingram, K. T. (Ed.), Rainfed lowland rice: Agricultural research for high-risk environments. Manila, Philippines: IRRI. pp.3-18.

*Rice / Environmental effects / Drought / Salinity / Plant growth / Agricultural research*  
(Location: HQ Call No: 633.18 G000 ING Record No: H 17755)

19752. **Tabuchi, T.; Hasegawa, S. (Eds.) 1995.** Paddy fields in the world. Tokyo, Japan: Japanese Society of Irrigation, Drainage and Reclamation Engineering. iv, 353p.

*Rice / Agricultural production / Crop yield / Irrigated farming*  
(Location: HQ Call No: 633.18 G000 TAB Record No: H 18090)

**633.61 Sugar cane**

19753. **Rehman, S. 1988.** Determining contribution of main factors of production on yield of sugarcane. 80p.

*Crop yield / Agricultural production / Sugarcane / Agronomy / Pakistan / Punjab*  
(Location: PAK Call No: D 633.61 G730 REH Record No: PK 2674)

**634.9 Forestry**

19754. **Stokes, B. J.; Rawlins, C. L. (Eds.) 1991.** Forestry and environment: Engineering solutions: The proceedings of the June 5-6, 1991 conference sponsored by the Forest Engineering Group, New Orleans, Louisiana. St. Joseph, MI, USA: ASAE. viii, 252p. (ASAE publication 09-91)

*Forest management / Forestry / Engineering / Environmental effects / Natural resources*  
(Location: HQ Call No: 634.9 G000 STO Record No: H 19038)

**634.99 Agroforestry**

19755. **Singh, G. 1993.** Agroforestry in salt affected soils. Karnal, India: Central Soil Salinity

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(Location: HQ Call No: PER Record No: H 19628)

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