

A.I.D. BIBLIOGRAPHY SERIES
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WHEAT PRODUCTION PROGRAMS

A Selected List of References for A.I.D. Technicians

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Wheat Development Programs

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INTRODUCTION

This bibliography is one of a series designed to provide a guide to the publications of AID and other agencies working in the field of development assistance. Reports on work by American foundations, private organizations and international agencies are included to a limited extent, as well as those issued by AID.

AID employees should be able to benefit by the Agency's past experience. One method of benefitting from this experience is the reading of reports on past activities. The annotated listings in this particular bulletin reflect the experience of AID and other agencies in programs designed to promote the development and use of high-yield, dwarf wheat seed.

To Obtain Retention Copies

If a technician wishes to obtain a publication issued by an AID mission for his own files, he should address his request directly to the mission.

If the desired publication was issued by any agricultural agency, either federal or state, the technician should address his request to the AID Agriculture and Rural Development Service of the War on Hunger. The mailing address of this Service is:

WOH/ARDS
Agency for International Development
Washington, D.C. 20523

Members of the AID/Washington staff who wish to obtain copies of publications for their own files may call Mrs. Ruth Lancetti, Technical Information Officer, WOH/ARDS. If distribution copies are not available, ARDS will advise staff members on other sources, including the AID Reference Center (ARC).

Loan Materials

Copies of all of the publications listed in this bibliography have been collected in the AID Reference Center. In cases where only one copy of a document is available, it must be used in the Center unless it is relatively short and can be duplicated easily. When two copies are available, one is for loan in Washington or to staff members in AID missions.

Loans to Washington staff members are for a two-week period and materials may be picked up directly from the Center in Room 1656 New State. Overseas AID staff members should send requests for loan materials to WOH/ARDS at the address shown above. Overseas loans are for one month.

Guides To Use Of This Bibliography

1. A first point of reference should be the bibliographic classifications used in the table of contents to see if the topic of particular interest to the technician is included there.
2. The annotations of some of the larger publications included in the "General" (first) section of the bibliography will sometimes indicate coverage of a specific topic which may be of interest.
3. Staff members who would like to read a broad general treatment of the development of high-yield grains, not only in Mexico but throughout the world, should read Campaigns Against Hunger (see item 1, page 1).
4. Technicians desiring to read detailed statements on the AID program on dwarf wheats, which rank high as evaluative documents should read the Spring Review papers (1969). Early versions of some of the Spring Review papers were listed as items No. 16, 19, 20 and 22 of this bibliography. The final versions of all Spring Review papers pertaining to wheat are listed in Part III of this bibliography starting on page 10.

Additional Suggestions

Suggestions as to distribution or format of this bibliography or of additional publications to be included in it (along with two copies of each) should be addressed to the Program and Technical Information Staff as follows:

PPC/PRB/PTIS
Agency for International Development
Washington, D.C. 20523

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WHEAT DEVELOPMENT PROGRAMS

PART I. General Materials On High-Yield Varieties

GENERAL

1. Stakman, E.C., Richard Bradfield and Paul C. Mangelsdorf, CAMPAIGNS AGAINST HUNGER. 1967, 328 pp. Cambridge: Harvard University Press. Reference copies available in AID in the Agricultural Research and Development Service and in the AID Reference Center. ARC Catalog No. 636, S875.*

A broad survey of Rockefeller Foundation's activity in the field of agricultural development reports on the development and adoption of the new high-yield dwarf wheat in Mexico in the early 1960's. See particularly Chapter 5 "The Wheat Revolution", Chapter 16 "The International Wheat Program: Extending Mexico's Grains Far Beyond Her Borders", and Chapter 18 "Lessons Learned and Future Prospects".

2. CIMMYT REPORT 1967-68: ON PROGRESS TOWARD INCREASING YIELDS OF MAIZE AND WHEAT. 1968, 99 pp. Centro Internacional de Mejoramiento de Maiz y Trigo (International Maize and Wheat Improvement Center), Londres 40, Apartado Postal 6-641, Mexico 6, D.F., Mexico. ARC Catalog No. 633.1, I61, 1967-68.

Summarizes the latest developments regarding the introduction of the new high-yield wheat varieties in Pakistan, India, Turkey, Afghanistan, Tunisia, Morocco, Argentina and other countries. Reports on the research program being carried out on the development of new varieties of wheat and on improved production methods.

3. Dalrymple, Dana G., IMPORTS AND PLANTINGS OF HIGH YIELDING VARIETIES OF WHEAT AND RICE IN THE LESS DEVELOPED NATIONS. Dec. 1968, 18 pp. International Agricultural Development Service, U.S. Department of Agriculture. ARC Catalog No. 633.1, D419.

Reports on the increased use of high yield wheat and rice seed 1964-68. Lists imports of new wheat seed varieties by 10 countries and rice seed by 15 countries. Bibliography listing sources.

* ARC is the abbreviation for AID Reference Center located in Room 1656 New State Building, AID/Washington.

4. PROGRESS REPORT: TOWARD THE CONQUEST OF HUNGER 1965-66: PROGRAM IN THE AGRICULTURAL SCIENCES. 1966, 231 pp, Rockefeller Foundation, 111 West 50th Street, New York, N.Y. 10020. ARC Catalog No. 630, R682.

Wheat improvement activities are covered in pages 26-29.

RESEARCH: Increasing Protein and Lysine Content of Wheat

5. Johnson, V.A., P. J. Mattern, D. A. Whited and J.W. Schmidt, BREEDING FOR HIGH PROTEIN AND QUALITY IN WHEAT. 1968, 16 pp. Department of Agronomy, University of Nebraska, Lincoln, Nebraska. ARC Catalog No. 633.11, D419.

This paper developed as a part of AID research contract, csd-1208, summarizes the results of 14 years of research at the University of Nebraska to improve the nutritional quality of wheat through increases in the amount and nutritional value of protein. Increases in protein content of Atlas 66 in the range of 15 to 25 percent have been achieved. The amino acid balance in wheat has also been improved. Bibliography.

6. Mattern, P.J., V.A. Johnson, J.W. Schmidt and D. A. Whited, IMPROVEMENT OF THE NUTRITIONAL QUALITY OF WHEAT THROUGH INCREASED PROTEIN CONTENT AND IMPROVED AMINO ACID BALANCE. Fourth Semi-annual Progress Report on Contract No. AID/csd-1208. January 1, 1968 to June 30, 1968, 10 pp. University of Nebraska, Lincoln, Nebraska. ARC Catalog No. 633.11, N362.

Under this contract 6,000 wheats from the USDA World Collection have been analyzed for protein and lysine content. In the testing program 230 crosses have been made of wheats showing high yields in these two nutritional elements.

HANDLING, STORAGE, MARKETING

7. SERVICES RENDERED UNDER THE AGREEMENT BETWEEN THE AGENCY FOR INTERNATIONAL DEVELOPMENT AND MISSISSIPPI STATE UNIVERSITY, 1958-1967. Contract No. AID-W-607. 58 pp. Seed Technology Laboratory, Mississippi State University, State College, Mississippi. ARC Catalog No. 631.521, M678b.

Reports on a series of AID-sponsored overseas seed improvement seminars and workshops, and on the related follow-up activities.

8. Vaughn, Charles E., Bill R. Gregg and James C. Delouche, editors, SEED PROCESSING AND HANDLING. Handbook No. 1 Jan. 1968, 295 pp. Seed Technology Laboratory, Mississippi State University, State College, Miss. ARC Catalog No. 631.521, M678a.

A general manual, not confined to wheat seed processing equipment alone. Discusses the general principles of seed processing, precleaning and conditioning equipment, and basic cleaning and sizing equipment. There are separate chapters on specific gravity, surface texture, air and electronic separators; on elevating and conveying equipment and; design and layout of a processing plant.

9. Hodges, T.O., STRUCTURAL REQUIREMENTS OF GRAIN BINS. July 1968, 5 pp. Contract No. AID/csd-1588. Food and Feed Grain Institute, Kansas State University, Manhattan, Kansas 66502. ARC Catalog No. 631.23, K16.

A report adapted from USDA Circular No. 835, "Grain Bin Requirements." Discusses requirements for foundations, anchoring, floors, walls, roofs and openings.

10. Pedersen, John R., REPORT ON FOOD GRAIN STORAGE, MARKETING, HANDLING AND TRANSPORTATION IN JORDAN. July 1968, 67 pp. Contract No. AID/csd-1588. Food and Feed Grain Institute, Kansas State University, Manhattan, Kansas 66502. ARC Catalog No. JO631.23, K16.

A report of two weeks' observation in Jordan which pinpointed areas for intensive study, provided immediate resolution of certain problems, and generally outlined a program for developing improved grain storage, handling, marketing and transportation.

11. Pedersen, J.R., A PROPOSAL TO EQUIP METAL SILOS IN JORDAN WITH AERATION AND TEMPERATURE MONITORING EQUIPMENT. Aug. 1968, 28 pp. Contract No. AID/csd-1588. Food and Feed Grain Institute, Kansas State University, Manhattan, Kansas 66502. ARC Catalog No. JO 631.23, K16.

Explains in detail how to modify and equip metal silos to provide safe storage for bulk grain. Provides detailed specifications for bins and other necessary equipment, along with operating procedures, sources of equipment and estimated costs.

12. Wendling, L.T., ASSESSMENT OF FOOD-GRAIN STORAGE FACILITIES, WEST PAKISTAN. Oct. 1968, 31 pp. Contract No. AID/csd-1588. Food and Feed Grain Institute, Kansas State University, Manhattan, Kansas 66502. ARC Catalog No. PK631.23, K16, No. 7.

Describes the types of storage in use and the general use of each type. Recommends plans for increasing storage capacity by better utilization of existing space through management changes. Cost and volume statistics provided. Sets out basic details for new storage construction. Recommends methods for minimizing losses of grains in storage because of birds, rodents and insects.

13. McCoy, J.H. and D.S. Tolle, IMPLEMENTATION OF GRAIN STORAGE OPERATIONS, MARKETING SERVICES AND PRICE STABILIZATION IN HONDURAS. Oct. 1968, 13 pp. Contract No. AID/csd-1588. Food and Feed Grain Institute, Kansas State University, Manhattan, Kansas 66502. ARC Catalog No. HO 631.23, K16, No. 8.

States qualifications and training requirements for development of good elevator and warehouse managers. Gives recommendations for applying businesslike methods to grain storage and marketing. Also has general recommendations regarding official weights and measures, grain grading, warehouse licensing and examination, market information, control services and price support, and stabilization.

PART II. Country Programs

AFGHANISTAN

14. U.S. Agricultural Review Team, AGRICULTURAL DEVELOPMENT IN AFGHANISTAN WITH SPECIAL EMPHASIS ON WHEAT PROBLEMS, PROSPECTS AND PRIORITIES. 1967, 106 pp. USAID/Kabul. ARC Catalog No. AF633.11, U58.

Chapter II gives a broad picture of the Afghan agricultural situation. The chapters on wheat discuss production technology, fertilizer usage, seed situation, cultural practices, pest control, irrigation, tools, machinery, price policy, marketing, training of personnel and research.

15. Waldee, Edward L., RESULTS OF THREE INTERNATIONAL WHEAT YIELD NURSERIES IN AFGHANISTAN 1964-66. 1967, 17 pp. USAID/Kabul. ARC Catalog No. AF633.11, W158.

Field trials show the high adaptability of certain Mexican high-yield wheat varieties to Afghan conditions.

INDIA

16. DRAFT REPORT ON WHEAT, COUNTRY CROP PAPER FOR SPRING REVIEW. March 3, 1969, 118 pp. USAID/New Delhi, India. Included in item No. 39.
17. FIVE YEARS OF RESEARCH ON DWARF WHEATS. 1968, 52 pp. Indian Agricultural Research Institute, New Delhi, India. ARC Catalog No. IN633.11, I39.

A summary report on experimental work in India with different varieties of dwarf wheats using different types of fertilizer and production methods. Bibliography listing 31 items on dwarf wheats in India.

18. ACCELERATING INDIA'S FOOD GRAIN PRODUCTION 1967-68 TO 1970-71. Foreign Agricultural Economic Report No. 40. 1968, 28 pp. Economic Research Service, US Department of Agriculture. ARC Catalog No. IN630.954, H498.

Reports on food grain production trends in India, and recent steps taken to introduce new high-yield varieties of rice, wheat, bajra, maize, and jowar. Outlines the required physical inputs and methodology necessary to secure a 5 percent annual growth in India's grain production.

MEXICO

19. Dalrymple, Dana G. SPRING REVIEW, NEW VARIETIES IN MEXICO. April 1969, 33 pp. Final version included in item No. 36.

MOROCCO

20. WHEAT PRODUCTION IN MOROCCO, SPRING REVIEW, COUNTRY PAPER ON NEW GRAIN VARIETIES. March 13, 1969, 23 pp. USAID/Rabat, Morocco. See item No. 38.
21. Meineke, W.H., HISTORY AND DEVELOPMENT OF THE NORTH AFRICA REGIONAL WHEAT PROGRAM. Dec. 1968, 23 pp. AID/Washington. ARC Catalog No. AFR633.11, M514.

Reports on the results, over a two-year period, of the try-outs of a number of Mexican dwarf wheats in Morocco and Tunisia.

PAKISTAN

22. Airgram to AID/Washington, TOAID A-252, March 17, 1969, 71 pp. Subject: SPRING REVIEW ON NEW GRAIN VARIETIES. USAID/Pakistan. See item No. 37.
23. Eckert, Gerry B., FERTILIZER PRACTICES AMONG GROWERS OF DWARF WHEAT IN PAKISTAN'S PUNJAB. 1968, 30 pp. Ford Foundation. ARC Catalog No. PK633.11, F699.

Reports on a research project to determine what factors were impeding the use of fertilizers with dwarf wheats, to rank them in order of importance; suggests methods of alleviating them.

24. Qureshi, S.A. and Ignacio Narvaez Morales, ANNUAL TECHNICAL REPORT, ACCELERATED WHEAT IMPROVEMENT PROGRAM, WEST PAKISTAN 1966-67. Planning Cell, Agriculture Department, Government of West Pakistan, Lahore, ARC Catalog No. PK633.11, P152, 1966-67.

Analyzes the experience gained in the second growing season for dwarf wheats which saw the wheat acreage increased from 10,000 to 250,000. Reports research on production methods, fertilizer usage, insect and disease control, weed control, irrigation usage and development of new varieties.

25. Narvaez, Ignacio M and Addvar Aresvik, REQUIREMENTS TO GET SELF-SUFFICIENCY IN WHEAT FROM 1968 ONWARD. 1966, 19 pp. Ministry of Agriculture, Government of West Pakistan, Lahore. ARC Catalog No. 633.11, P152a.

Specialists from the International Center for Maize and Wheat Improvement in Mexico City and from the Pakistan Ministry of Agriculture analyze Pakistan's past experience on the use of fertilizers with dwarf wheats and indicate the necessary actions which must be taken to secure self-sufficiency in wheat production.

26. Narvaez, Ignacio M. and Norman E. Borlaug, ACCELERATED WHEAT IMPROVEMENT IN WEST PAKISTAN AND THE REVOLUTION IN AGRICULTURE. 1966, 60 pp. Planning Cell, Office of the Secretary of Agriculture, Government of West Pakistan, Lahore. ARC Catalog No. 633.11, P152b.

Two specialists from the International Center for Maize and Wheat Improvement in Mexico City outline a five-year plan for increasing wheat production in Pakistan, and point out the lessons which were learned during the first growing season (1965-66).

TUNISIA

27. Meineke, W.H., HISTORY AND DEVELOPMENT OF THE NORTH AFRICAN REGIONAL WHEAT PROGRAM. Dec. 1968, 23 pp. AID/Washington. ARC Catalog No. AFR633.1, M514.

Summary of the results, over a two-year period, of the tryouts of a number of varieties of Mexican dwarf wheats in Tunisia and Morocco.

28. Litzenberger, S., REPORT OF PROGRESS - DECEMBER 1968: ACCELERATED REGIONAL CEREALS PRODUCTION PROJECT. Jan. 1969, 18 pp. AID/Washington. ARC Catalog No. 633.1, I61.

Progress report on the Tunisian Accelerated Cereals Project for the last quarter of 1968 and work plans for 1969. The project, under contract agreement with CIMMYT, the Government of Tunisia, and USAID, began on a formal basis in 1968.

TURKEY

29. Humphrey, L.M., MEXICAN WHEAT COMES TO TURKEY. 1969, 67 pp. USAID/Ankara, Turkey. ARC Catalog No. TU633.11, H926.

An illustrated report with sections covering early history, preparatory steps, strategy, implementation, problems, research, payoff, and a look at the future of the AID Turkey semi-dwarf wheat project.

30. Ross, James G. et al, WHEAT PRODUCTION IN EASTERN ANATOLIA. 1967, 53 pp. USAID/Ankara, Turkey. ARC Catalog No. TU633.11, R824.

Reports on fertilizer trials with several different varieties of wheat in the Erzurum region of eastern Turkey. Describes a modern adaptation of an ancient method of planting wheat so as to conserve moisture.

31. PARTICIPANT JOURNAL (WHEAT ISSUE), Vol. 6, No. 27, July 1967, 80 pp. USAID/Ankara, Turkey. Copies also available from WOH/ARDS, AID/Washington. ARC Catalog No. TU309.22354961, P273.

A well illustrated report on the successful introduction of Mexican wheat seed into Turkey, and the resulting increases in yield.

32. Frizzell, John K., INTRODUCTION OF MEXICAN WHEAT IN TURKEY, 1967-68. 1968, 129 pp. USAID/Ankara, Turkey. ARC Catalog No. TU633.11, 066.

Reports on activities of a team of 11 Oregon State University wheat specialists who worked with Turkish farmers during the effort to introduce Mexican dwarf wheat. Makes recommendations for overcoming the difficulties encountered. Also contains consultants' reports by T.L. Jackson (Soils and Fertilizer), and Warren Konstad (Performance and Adaptation of Mexican Wheat Varieties in Turkey).

33. Humphrey, L.M., MANAGEMENT OF THE GOVERNMENT OF TURKEY WHEAT SEED IMPORT PROGRAM, 1967-68 CROP. 1967, 9 pp. USAID/Ankara, Turkey. ARC Catalog No. TU633.11, H927.

Describes the import arrangements for 22,500 tons of high-yield wheat seed, problems encountered and the institutional changes and educational activities which were developed to carry out the program.

34. Jackson, Thomas L. and Warren E. Kronstad, FINAL REPORT: EXPANSION OF WHEAT PRODUCTION IN TURKEY. 1967, 39 pp. USAID/Ankara, Turkey. ARC Catalog No. TU633.11, J14.

An evaluation of the first year's experience of introducing Mexican wheat varieties into Turkey. Based on a three-week inspection tour by two Oregon State University wheat specialists.

PART III. Spring Review: New Cereal Varieties: Wheat

May 13-15, 1969

Programs to introduce high yield grains into newly developing countries have been covered in a series of special evaluative reports. They served as the basis of discussion in the 1969 Spring Review by representatives of AID administration, the technical bureaus and specialists from outside the Agency. The purpose of this Spring Review was to examine recent AID experience with high yield grains with a view to developing appropriate agricultural sector strategy for the future.

Five series of papers were developed in connection with this activity and the function of each of these is specified in the introductory statement to each section below. All of the Spring Review papers, items 35 through 53, were assembled and printed by AID/Washington. Of these, the country papers were prepared for the most part by AID Missions. The other papers were prepared by AID/Washington staff members, specialists of the U.S. Department of Agriculture and other U.S. Government agencies, and by university authorities on high yield grains under contract to AID/Washington.

A. Country Crop Papers, listed in this section, tell the basic story of the introduction of high yield wheat in the individual country. These reports include original airgrams and other supporting documents from missions where AID has wheat production programs. In some cases it will be more convenient for technicians to consult the original airgram report, and where this has been included in the foregoing bibliographic listings, we are cross-referencing it below:

35. WHEAT IN TURKEY. March 1969, 122 pp. USAID/Turkey. ARC Catalog No. TU633.1, U58.
36. Dalrymple, Dana G., USDA, WHEAT AND CORN IN MEXICO. May 1969, 36 pp. ARC Catalog No. MX633.1, D419.
37. RICE AND WHEAT IN PAKISTAN. March 1969, 71 pp. USAID/Pakistan. ARC Catalog No. PK633.1, U58.
38. WHEAT IN MOROCCO. May 1969, 23 pp. USAID/Morocco. ARC Catalog No. MR633.1, A265.
39. RICE AND WHEAT IN INDIA. March 1966, 272 pp. USAID/New Delhi, India. ARC Catalog No. IN633.1, U58.

40. LATIN AMERICA: NEW CEREAL VARIETIES. April 1969, 140 pp. ARA-LA, AID/Washington. ARC Catalog No. LAT633.1, A265.

The above volume contains the following reports on wheat:

- (a) Colombia - Wheat by H.W. Ream. 39 pp.
- (b) Brazil - Some Notes on Rice and Wheat by R.R. Newberg and H.W. Ream. 11 pp.
- (c) The Paraguayan Wheat Program: Analysis of Factors Contributing to the Success of the Wheat Commission by Adlai F. Arnold. 9 pp.

- B. Global Crop Papers analyze AID's worldwide experiences with the introduction of new types of high yield grains and reach conclusions about significant factors which explain success in some countries and failure in others. The one dealing with wheat is:

41. Kronstad, Warren E., WHEAT. May 1969, 57 pp. ARC Catalog No. 633.1, A265.

- C. Functional Papers, listed in this section, are analytic documents which provide insight on two main issues: (a) why the high yield varieties have been adopted at unprecedented rates almost everywhere they were introduced; and (b) what problems are emerging from these successes.

- 42. Willet, Joseph W., NEW VARIETIES IN ASIA. May 1969, 32 pp. ARC Catalog No. 633.1, A265i.
- 43. Mellor, John W., THE ROLE OF GOVERNMENT AND THE NEW AGRICULTURAL TECHNOLOGIES. May 1969, 61 pp. ARC Catalog No. 633.1, A265a.
- 44. Rizzo, E. Edward and Kenneth F. Smith, MANAGEMENT SYSTEMS. May 1969, 49 pp. AID/Washington. ARC Catalog No. 633.1, A265h.
- 45. Rice, E.B., THE ROLE OF INSTITUTIONS. May 1969, 46 pp. ARC Catalog No. 633.1, A265f.
- 46. THE ROLE OF INSTITUTIONS SUPPLEMENT --CASE STUDIES OF SIGNIFICANT INSTITUTIONAL INPUTS. May 1969, 43 pp. Arranged by E.B. Rice. This document is bound as a part of item 45 above.

47. International Fertilizer Staff of the Tennessee Valley Authority, Omer J. Kelley and James M. Blume of AID/Washington, MAJOR PHYSICAL INPUTS. May 1969, 43 pp. ARC Catalog No. 633.1, A265g.
48. Daspit, Alex B., THE ROLE OF RESEARCH. May 1969, 34 pp. ARC Catalog No. 633.1, A265e.
49. French, J.T. and P. Lyman, EMERGING PROBLEMS. May 1969, 25 pp. ARC Catalog No. 633.1, A265c.
50. Newberg, R.R., EMERGING PROBLEMS: SOME ECONOMIC CONSIDERATIONS. May 1969, 30 pp. ARC Catalog No. 633.1, A265d.
51. Hendrix, E., USDA, and Dale W. Adams, AID/Washington, PRIORITIES AND PROGRAMMING. May 1969, 51 pp. ARC Catalog No. 633.1, A265b.

D. Issue Papers, of two to three pages each, highlight the principal issues raised in the functional papers and provide a mechanism for guiding and focusing the discussions on each issue.

52. ISSUE PAPERS bear the same titles as items No. 44, 45, 46, 48, 49 and 50. These papers are bound in one folder separately from the functional papers. ARC Catalog No. 633.1, A265k.

E. Implications Paper

53. Implications for A.I.D.: Spring Review of New Cereal Varieties. June 1969, 38 pp. ARC Catalog No. 633.1, A265g.

This summary of the findings and implications of the Spring Review discussions are presented in the following seven sections: Summary and Overview, Price Policy, Management Systems, Institutions, Major Physical Inputs, Research, Emerging Problems of Cereal Surpluses and Socio-Political Effects.