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MINISTRY OF MAHAWELI DEVELOPMENT
MAHAWELI AUTHORITY OF SRI LANKA

Mahaweli Economic Agency
Mahaweli Engineering and Construction Agency

MARD PROJECT

Pimburattewa
via Polonnaruwa

Development Alternatives, Inc.
Colorado State University
Oregon State University
FINTRAC, Inc.
Post - harvest Institute
for Perishables

END OF TOUR REPORT

by

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EXTENSION AGRONOMIST

MARD PROJECT
PIMBURATTAWA

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END-OF-TOUR REPORT

1. INTRODUCTION

The Mahaweli Economic Agency/ Mahaweli Agriculture and the Rural Development (MEA/MARD) Project seeks to increase farmer incomes in System 'B' through crop diversification. This program has two main thrusts: increase productivity and hectarage for traditional high value crops, such as big onion, red onion chilli, grain legumes, local vegetables etc. and the introduction and extension of new high value crops for the export market. The MEA/MARD Extension network in System 'B', based on the work of the Block and Unit staff, supervised by the Deputy Resident Project Manager (DRPM)/ Agriculture, Subject Matter Officers (SMOs) and the MARD Extension Agronomist are prepared to cope with the demands of extension for the traditional high value crops and paddy. However they cannot add to these responsibilities of learning how to grow and harvest new crops, using different techniques, inputs, and quality standards. This task is difficult, particularly as most System 'B' farmers have not grown these crops previously, although 36% have grown traditional high value crops.

For this reason, PRC (Project Review Committee) has agreed to the recruitment of 30 extension agents under MARD funding for one year to carry out extension work for the export oriented crops. Two consultants were hired by the MEA/MARD to develop and implement an extension program for the export of quality fruits and vegetables and to closely supervise and monitor the performance of the new extension agents for the first production season for the pack-house/cold chain.

2. TERMS OF REFERENCE OF EXPORT CROP EXTENSION SPECIALIST

1. Upon arrival in Sri Lanka, consult with MEA, TESS(Pvt.) Ltd, USAID, and MARD staff about previous extension experience and practices in System 'B', about crops to be grown, and agronomic conditions. Review all relevant MARD and Department of Agriculture (DOA) reports and scientific literature on the crops in question.

2. Prepare an extension program for System 'B' export crops for 1992, including:

   a. Detailed instructions to extension agents on their daily activities on a week, by week, and crop by crop basis;
   b. Programs and schedules for farmer training and extension agent training;
   c. Preparation of written extension materials for all seasons and crops;
   d. Methods for tracking and monitoring the activities of extension agents, including field books, farmer record keeping, etc.; and
   e. Determination, collection and analysis of data required to estimate returns to farmers from the cultivation of each of the export program crops.

3. Participation in the initial two week residential training course to be given to extension agents from February 1, 1992 at the Mahaweli Regional Training Centre

4. Organize and coordinate the in-service training of extension agents during the year, and organize and help deliver training to farmers participating in the export production program.

5. Monitor and control the deliveries of inputs under the Seylan Bank credit program to participating farmers and work with extension agents to ensure and monitor the proper use of inputs.

6. Train farmers and extension agents and monitor the implementation growing export crops, use of inputs, record keeping, harvesting and transport of produce to the pack-house.

7. Track deliveries to the pack-house and analyze the economic viability of a private sector extension service attached to the pack-house.

8. Train designated pack-house staff in the operation and maintenance of an efficient, tight extension system for profitable export crop production, harvesting and transport.

9. Work with the MARD Extension Agronomist and MEA staff to improve extension supervision, monitoring and efficiency.

10. Prepare quarterly and seasonal reports on his/her activities.

3. DEVELOPMENT OF APPROPRIATE EXTENSION METHODOLOGIES

3.1 Broad Extension Objectives

Being consistent with the MEA/MARD project objectives, the broad extension objective could be defined as follows:

> **"To help settler and commercial farmers in System B, to improve their incomes and their quality of lives by focusing extension efforts on crop diversification, including both high value crops for export and local production".**

3.2 Extension Strategy

Understanding the prerequisites for a strong export extension program, it is a difficult task to suggest a mechanism to hook a highly specialized export crop extension system to the existing MEA network to achieve the project objectives. Due to complexity, such extension programs should be initially executed by the MARD staff and phased out before handing over to the existing system of the MEA and the private sector.

This exercise could be made simple if crops are grouped into the following categories and different strategies are worked out to match each of them.

GROUP 1 : High value crops exclusively grown to standards which will permit penetration of export market, utilizing cold chain processing facilities. eg. Cantaloupe melon, zucchini, asparagus, baby corn, sweet corn etc.

GROUP 2 : High value crops grown primarily for an export market but having a good local market as well. eg. green chilli, yellow onion, cabbage, okra, bittergourd, snakegourd, capsicum, butternut, brinjal etc. The MARD professionals have recently identified a list of crops in this group of crops having a potential export demand.

GROUP 3 : Traditional high value crops which have only a local demand. eg.chilli, B.onion, red onion, green gram, soya bean etc.

Due to high complexity of production, precision needed in post-harvest handling and the high risk factor in producing crops in group 1, it is suggested that a realistic number of extensionists work exclusively for the production of these exotic crops. As the production technology and extension for the crops in group 2 are not as sophisticated as those in group 1, it makes a good start to commence a close collaboration with the MEA staff. The traditional high value crops in group 3 may remain with the MEA staff.

3.3 Commodity Approach

In dealing with crops in Group 1, a commodity approach style of extension effort may be more appropriate, where a group of extensionists is supervised by a group leader, under the technical guidance of a professional, to achieve targets set to produce a particular commodity to meet the standards prescribed for export. Extension exclusively for export crop production is a difficult task. Success of such a program rests on the technical competence of the extensionists, their close supervision, regular upgrading of their knowledge and skills and monitoring of the program. Here, the legitimate functions of extension should cover input supply, post-harvest quality control and stream lining supplies, marketing etc. Thus it demands a 'single line of command' and 'extension exclusive' style of extension management. Hence it is recommended that the extensionists involved in this group continue to remain in the hands of the MARD staff.

3.4 Private Sector Extension

Private sector extension services operate in many parts of the country, where the services are oriented on commodity base eg. tobacco, gherkin, sugar cane etc. Such extension services are found even in System B, where out grower schemes exist around commercial gherkin growers. The first large scale commercial lot of export produce through the "TESS pack-house/ cold chain" went to its destiny in mid 1992. It is too early to make a comprehensive economic analysis to assess the viability of private sector extension service at a stage the system is not running at its full capacity. However it may not be unrealistic, in the near future, to suggest that it would be a viable proposition for the TESS to run its own extension service as the other private entrepreneurs are doing in System B. The number of extensionists needed to handle such a program should be based on the quantum of export production handled by the TESS Pvt. Ltd. Some of the more competent extensionists now closely working with the export program may be absorbed by the TESS Pvt. Ltd and other companies involved with the MEA/MARD cold chain program.

3.5 Training and Visit (T&V) System of Extension

T&V extension system introduced by the World Bank to Sri Lanka and many countries in Asia and Africa, has proved its efficiency as a management tool of extension. The time-bound visiting schedule backed by an ongoing training are two components which could be incorporated into the existing extension system dealing with the promotion of Group 2 and group 3 crops. Such a modified version of T&V extension system is currently in operation in Mahaweli System 'B'.

3.6 Whole Farm Approach

In order to maintain the high quality standards, the production of certain groups of export crops have to be restricted to certain periods of the year. The fields identified for this purpose need to be 'blocked' during the rest of the period without lying fallow. Hence the extension efforts should not be beamed as discrete pieces of information pertaining to a particular season only. Instead they should capture a year round cropping sequence involving the low land, upland and the homestead. The year round cropping pattern should be designed on sound agronomic principles. Crop rotations for year-round production have been designed by MARD professionals (Selleck and Gleason). Economic analysis of various crop rotations too have been concurrently studied by them. The importance of rice, a crop culturally closely associated with the farming community, should not be ignored in proposing the cropping patterns.

3.7 Environment Extension Program

Production of high value crops is often associated with the use of pesticides and other agro-chemicals which could be hostile to the environment, if indiscriminately used. The crops exclusively produced for the export market are more vulnerable to this criticism as they need to be produced in a controlled atmosphere to maintain the desired quality standards. From the inception of the export crop production program, the MEA/MARD has been cautious about the importance of careful monitoring of the chemical use and its impact on the environment. This current emphasis should continue with better training to extensionists and creating awareness among the farmers.

4. TRAINING OF EXTENSION STAFF

4.1 Pre-Service Training

A three week pre-service training was provided at the Mahaweli Regional Training Centre (MRTC) to the batch of newly recruited 30 extensionists, drawing resource persons from MEA, DOA, MRTC and MARD technical assistance team. The curriculum was specially structured to provide an in depth training on theory and practice of export crop production. Some aspects of communication and preparation of extension material too were included in the curriculum to enable the extensionists to do a better professional job.

4.2 In-Service Training

The first batch of extensionists soon after receiving their induction training was given a 4 week on-the-job training to get them acquainted with cultural practices of export crops. The group of extensionists selected to deal with cantaloupe melon and zucchini was given a practical training on all aspects of cultivation from land preparation to field planting, including pest and water management. The extensionists identified to work with yellow onion, cabbage, okra, butternut, brinjal, bittergourd and snakegourd were given a practical training with main emphasis on nursery management, pest control and water management.

Eight in service training sessions were held to upgrade the knowledge of extensionists. These sessions were largely oriented to provide a practical training and to improve their skills on nursery management, field selection, land lay out, water management, pest control and post-harvest technology. Extensionists in batches were taken to farmers' fields, Regional Agricultural Research Centre (RARC), on-farm trial plots and TESS pack-house. The extensionists were provided with an opportunity to discuss field problems with researchers of the RARC at the station and farmers. The sessions on post-harvest technology were held at the TESS pack-house and in the field. The TESS pack-house manager and the two Extension Agronomists served as resource persons on harvesting, processing and quality control which are vital components in export crop production.

5 EXTENSION BULLETINS

A series of extension bulletins was introduced to send out day-to-day technical instructions to extensionists. Ten such bulletins have been prepared up to now. Extracts of research information from the DOA and the MARD technical papers and important field observations made by Extension Agronomists and their experience were used as the basic material in publishing these bulletins. A typical extension bulletin is provided in Appendix 1.

The subjects covered in the bulletins are as follows:

A) Crop production information
b) Pests and their control aspects of chili and yellow onion
c) Diseases and their control aspects of chili and yellow onion
d) Monitoring and evaluation of extension programs
e) Maintenance of farm record books

6. EXTENSION PROGRAM DEVELOPMENT

Planning and development of extension programs is a continuous and interrelated process involving situation analysis, identification of needs, resources and constraints, planning and tracking progress. Production of crops for export should be accomplished with a well coordinated program capturing the different sectors in the production system. So, it is imperative that the cliental (farmer), buyer (TESS), lender (Seylan Bank) and the extension people be involved in the planning process. A series of planning meetings (18) of this nature was held with active participation of the farmers, officials of the MEA and representatives of the TESS, Seylan Bank and MEA/MARD extension staff. Apart from the meetings held at Block level, several meetings were held at project level, with representatives of farmer organizations to discuss day to day issues or to change the course of action based on the feed back received from the extension staff.

This concept was taken a step further by organizing a two day workshop to plan the Maha 92/93 extension and production program in Bakamuna Block. This well attended workshop sponsored by the MEA/MARD enabled the implementers to identify constraints, assess resources and work out a more realistic plan through group consensus.

7. MONITORING AND EVALUATION

Methodologies to monitor and evaluate the extension and production program and the performance of extensionists were developed. This process facilitated the MARD technical team to keep a close tab of extension activities, input delivery system and track production flow to the TESS pack-house. Monitoring sheets were introduced to review the following activities:

7.1. Weekly performance evaluation of extensionists (Appendix 2), using the following evaluation criteria were used:
- Planning (production and extension programs)
- Farmer awareness (creation of awareness, organizing meetings, posters etc.)
- Knowledge and skill development (farmer training, method demonstrations, use of training material etc.)

- Site selection (drainage, irrigation, soils, accessibility etc.)
- Farmer selection
- Coordination of input supply,marketing and other services
- Farmer adoption (Recommended agronomic practices, crop performance, field lay out, quality of commodity produced, yield, profit margin etc.)

7.2. Daily monitoring of activities of the Extension Group Leaders (Appendix 3).

7.3. Progress report of the training program (Appendix 4).

8. FARMER TRAINING AND FIELD DAYS

8.1 Farmer Training

Farmers in System B, although had some training in the production of traditional high value crops lacked the know how of growing export crops. A series of training sessions was provided to the growers of export crops to improve their crop husbandry and develop skills for handling export crops. Thirty such training sessions were held during the period in review, with participation of over 1800 farmers; 261 of them were women.

8.2 Field Days

Twenty one field days were organized during the past 3 growing seasons to expose the farmers to new innovations, mainly in export crop production.

9. INTRODUCTION OF MARD PROGRAM TO BAKAMUNA BLOCK

9.1 Amalgamation of System 'G'

The System 'G' is now amalgamated with the System 'B' and functions as a Block (Bakamuna). On the directive of SG/MASL, MEA/MARD took an initiative to introduce the project activities to Bakamuna Block in Yala 92. It was not intended immediately to undertake a full fledged export program as there is no cold chain facilities in the Block. With the intention of progressive development of such facilities, a program to introduce high value crops was suggested. The uncertainties of water at the beginning of the season compelled to scale down the program to few demonstrations and on farm trials.

9.2 Potential for crop diversification

The potential for a crop diversification program in rice fields in Bakamuna Block lies in the new settlement area due to following reasons:

1. Over 70 % of the rice fields have Reddish Brown Earth (RBE) soils which are well drained. The proportion of this category of soils and the less drained Low Humic Glei (LHG) soils takes the reverse order as one moves towards the old settlement area.
2. This phenomenon is reflected in the choice of the crops eg. over 70 % of the OFCs grown in Maha and 80 % in Yala are produced in the new settlement areas.
3. Traditionally farmers here are experienced in growing OFCs for decades.
4. The settlers are people of the second generation and they could be assumed as relatively young, more educated innovative and receptive to new technologies.
5. Frequent shortage of irrigation water which is an incentive to switch over to OFCs.

Our first mission was to assess the potential of Bakamuna for crop diversification, with a progressive effort to introduce export crops. A rapid rural appraisal style of fact finding mission enabled the extension team to asses the vast potential of land, people and other resources in order to undertake a program of crop diversification, both in the low lands and high lands.

9.3 Trials and Demonstrations

The introductory program of Bakamuna Block was restricted to a small area due to non availability of water during the season. This pioneering effort had a three fold objective ; encourage farmers to grow non traditional high value crops like B onion, to study the feasibility of growing yellow onion and to introduce confectionery type of ground nut varieties. The introduction of high value crops was accomplished by a series of demonstrations, on farm trials (OFTs) conducted in association with Farming Systems Agronomist to study the fertility demand, effect of organic matter, dates of planting and performance of improved varieties of yellow onion. Although adequate technical information was available through OFT program in System B (before amalgamation), such information was felt vital in expanding the production program to Bakamuna Block. Ground nut is a popular traditionally grown crop in Bakamuna Block. However, the varieties were restricted to traditional or old improved varieties. A varietal trial and an associated seed multiplication program of confectionery types are under way to explore their vast potential.

9.4 Rain fed cultivation

Analysis of past 10 years of data, indicates 35 % of the irrigable land in the Block remains fallow during Yala season due to non availability of water. In certain seasons like in Yala 92, cultivation is possible only in certain tracts which get water from a perennial source. Up to now there was no suitable short age food crop which could be grown under rain fed conditions in the land which normally remains fallow. Three short age (55-60 days) varieties; "Harsha" (greengram), "Varuni" and "Vijaya" (cowpea), recently released by the Department of Agriculture were selected for this purpose. As sufficient stocks of these valuable seed material is not available, a seed multiplication program was initiated by growing 2 ha of the variety "Harsha" in Maha 92/93. Two hundred (200) farmers were issued with packets of 300g each for immediate planting in Maha 92/93. It is expected to multiply seeds sufficient to plant over 250 ha in Yala 93 by completing two production cycles before the commencement of next Yala rains. A similar program of seed multiplication program, on a less extensive scale is under way during this Maha season to popularize a high yielding confectionery type of ground nut.

10. SEED MULTIPLICATION PROGRAM

The availability of quality seed material had been one of the major constraints for the promotion of high value crops in System "B". High quality seed material is the starting point of a successful OFC program. Due to a policy directive, Department of Agriculture has restricted the seed program up to the issue of registered seeds, expecting the private sector and provincial organizations to take over the production of certified seeds. However this system, beyond the production of registered seed is not in full operation as expected and resulted in a break down in the availability of certified seeds. Hence, it is now important to produce a local seed multiplication program to supplement the restricted supply of certified seeds available through the sales outlets of the Department of Agriculture.

A local seed multiplication program was commenced in Maha 92/93 season to produce a limited amount of ground nut, greengram and soybean. It is intended to purchase the seeds thus produced and sold to farmers in the coming season. Initially MEA/MARD is expected to undertake this activity on no-loss-no-profit basis and hand over to the farmer organizations and the private sector to continue as a viable business venture. A similar program is currently spear headed by the MEA/MARD with active involvement of a private company; CIC, to produce certified seeds of chilli.

11. EARLY MAHA PRODUCTION PROGRAM

11.1 Uncertainties of Weather

The uncertainty of weather in early Maha is a constraint to maintain the expected quality of most high value export crops, except sweet corn, baby corn and green chilli. Hence it was intended to divert the concentration of MARD extensionists dealing with export crops, to high value traditional crops. The efforts of these extensionists will be reverted to export crop program once the season is right (late Maha) and firm export commitments are worked out. The crops, cropping patterns and technological packages were selected according to the two periods of planting; early Maha (October) and late Maha (January). The crops selected for early Maha were mainly chilli and vegetables which will be restricted to well drained soils.

11.2 Blocking of land

In order to block the land till January, crops like green gram, soybean, short age vegetables and 3 months paddy were suggested. Crops like cantaloupe, zucchini, green chilli, okra, and brinjal will be planted in late Maha for export.

11.3 Identification of High Potential Areas

Thirteen Units were identified for an intensified production program. A concentrated extension effort of the MARD extensionists was felt more productive in mobilizing their resources, supervision and close monitoring of the program.

The following incentives were provided to encourage the farmers in the selected groups of extensive crop production program.

1. Supplied chilli seeds on loan on the recommendation of the BM, the MARD extensionists and the farmer organizations.

2. Organized bank loans and marketing for selected groups of farmers who entered contract agreements with the TESS.

4. Provided an intensive extension service backed by a sound training and demonstration program.

12. RECOMMENDATIONS

The sustenance of the good work initiated by the MARD and its impact on the farming community is a measure of success of the project. One important area which needs concentration is evolving a mechanism for the MARD extension system to eventually merge into private extension systems and the MEA existing system without distorting the project objectives. The present extension system to handle high value crops; both for export and local market, was evolved based on this presumption. Some recommendations for further improvement are given below:

12.1 Extension Strategy

Due to high complexity of production, precision needed in post-harvest handling and the high risk factor in producing crops grown exclusively for export market, the extension services connected with these exotic crops should be directly administered by the MARD staff. As the production technology and extension for duel purpose crops ie. crops grown for local and export market, are not as sophisticated as those grown exclusively for export market, it makes a good start to commence a close collaboration with the MEA staff. The traditional high value crops grown for the local market may remain with the MEA extension staff.

12.2 Private Sector Extension

The first large scale commercial lot of export produce through the TESS pack-house/ cold chain went to its destiny in mid 1992. It is too early to make a comprehensive economic analysis to assess the viability of private sector extension service at a stage the system is not running at its full capacity. However, it may not be unrealistic even at this stage, to encourage private companies to run their own services. The number of extensionists needed to handle such a program should be based on the quantum of export production handled. Some of the more competent extensionists now closely working with the export program may be absorbed by companies involved with the MEA/MARD cold chain program.

12.3 Training and Visit (T&V) System of Extension

T&V extension system introduced by the World Bank to Sri Lanka and many countries in Asia and Africa, has proved its efficiency as a management tool of extension. The time-bound visiting schedule backed by an ongoing training are two components which should be progressively incorporated into the existing extension system dealing with the promotion of crops for the local market.

12.4 Whole Farm Approach

In order to maintain the high quality standards, the production of certain groups of export crops have to be restricted to certain periods of the year. The fields identified for this purpose need to be 'blocked' during the rest of the period without lying fallow. Hence the extension efforts should not be beamed as discrete pieces of information pertaining to a particular season only. Instead they should capture a year round cropping sequence involving both the low land, the upland and the homestead. The importance of rice; a crop culturally closely associated with the farming community should not be ignored in proposing the cropping patterns.

12.5 Environmental Extension

Production of high value crops is often associated with the use of pesticides and other agro-chemicals which could be hostile to the environment, if indiscriminately used. The crops exclusively produced for the export market are more vulnerable to this criticism as they need to be produced in a controlled atmosphere to maintain the desired quality standards. From the inception of the export crop production program, the MEA/MARD has been cautious about the importance of carefully monitoring the chemical use and its impact on the environment. Strong winds, particularly during Yala season has caused problems in causing physical damage to plants and their produce, thereby lowering their export value. Hence establishment of wind breaks is another area which needs sufficient attention. This emphasis should continue with better training to extensionists and creating an awareness among the farmers.

12.6 In-service Training

The extensionists knowledge and skills should be continuously upgraded. Hence it is recommended that in-service training program should continue with revised course contents to enable them to face new challenges

12.7 Extension Teaching Materials

New research information, observations and experiences which need to be shared among the extensionists should be circulated among extensionists in the form of bulletins. The series of bulletins already circulated should be constantly upgraded with the expansion of new research information.

13.8 Program Development

Production of crops for export should be accompanied by a well coordinated program capturing the different sectors in the production system. Planning meetings with participation of the growers, buyers, lending agencies and staff of MEA should be held at the commencement of every production season.

12.9 Workshops to Discuss Strategies

It is suggested that the MEA/MARD hosts pre-seasonal workshops to discuss strategies of extension and production of the incoming season. Learning a lesson from past experience it could be recommended that these sessions enabled the implementers and the clients to interact in a more conducive atmosphere for a better committed extension and production plan.

12.10 Monitoring and evaluation

Planning, monitoring and evaluation of the whole program should be done as a joint collaboration between the MARD and the MEA. This would enable to minimize ambiguities on production data and create a sense of joint responsibility between the MARD and the MEA staff. The methodology already developed for this activity should be progressively improved with the expansion of the program.

MARD/MDS EXTENSION BULLETIN # 5

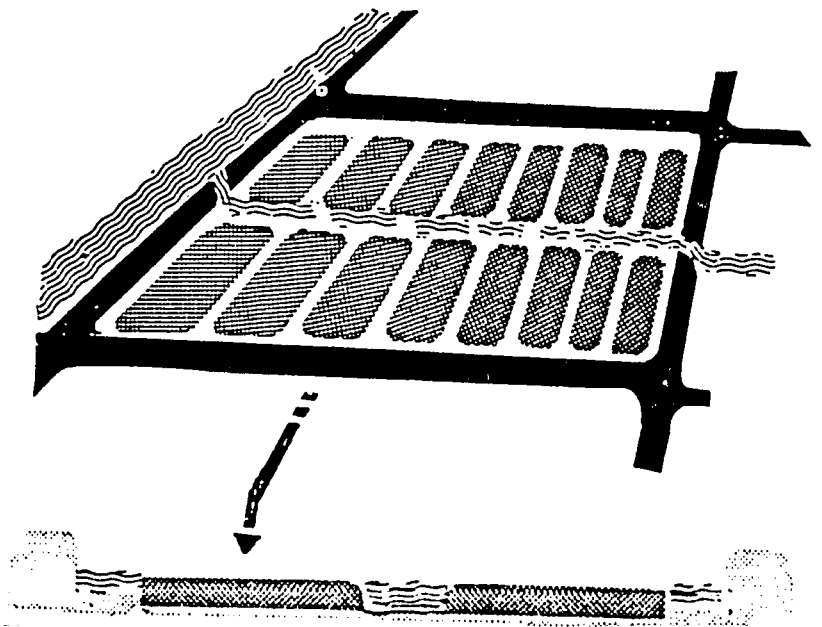
B ONION FIELD PLANTING

LAND SELECTION

- B onion does not stand wet feet. So, select well drained land where the water table during the season is below 0.6m (2 feet).
- As far as possible, avoid ill-drained soils and those with high percentage of gravel and pebbles.
- B onion tolerates a ph range from 6.5 to 7.8 for optimum growth.
- Due to slow early growth rate, difficulties in distinguishing the young B onion plants from the emerging perennial weeds and difficulties of controlling them with the common weedicide avoid lands infested with purple nutsedge or ('Kalanduru'),Cynodon dactylon ('Heen etora') and Panicum repens ('Etora').

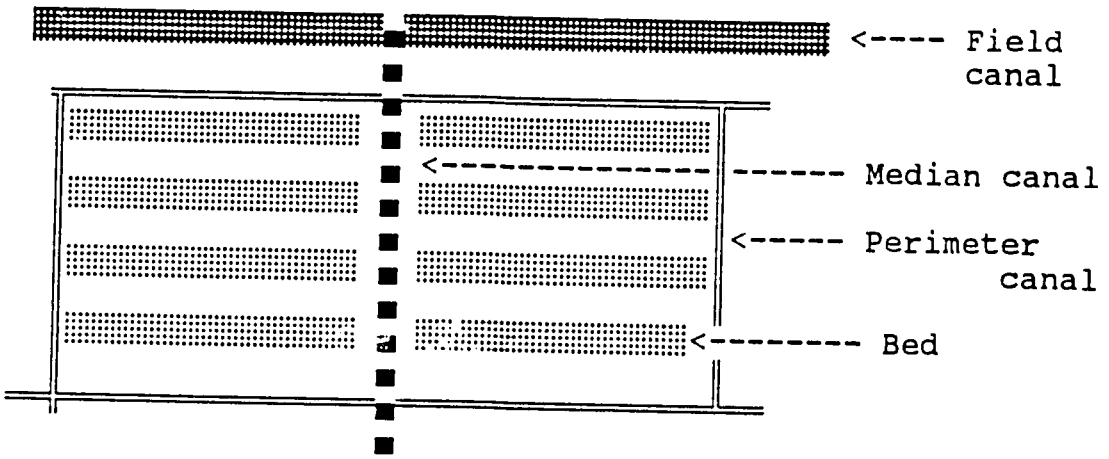
LAND LAY OUT

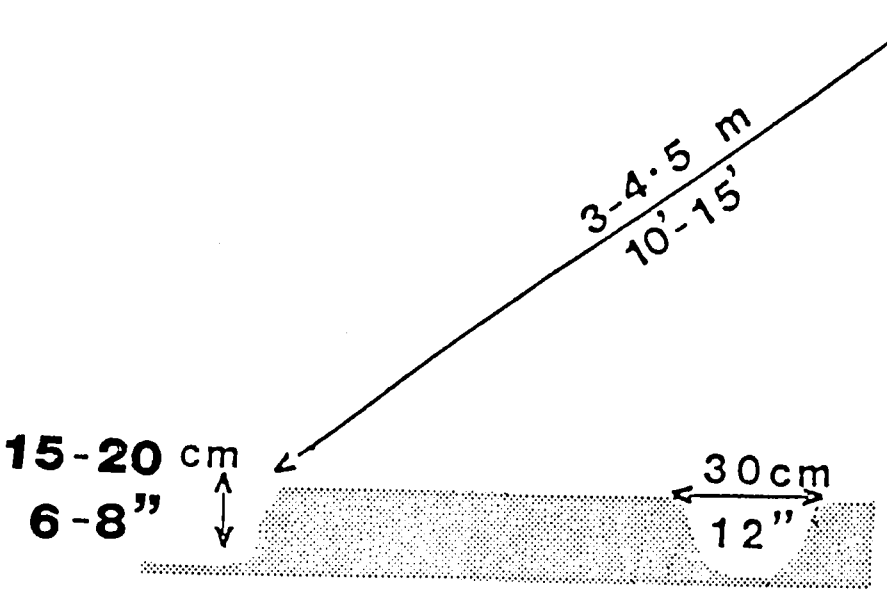
- The shallow root system of B onion plants demands a well prepared land for planting; ploughed to a soil depth of about 30 cm (12 inches) followed by two harrowings.
- Irrigation and drainage system should be carefully designed to supply the right amount of water within the shortest possible time and flush out quickly the surplus water. The median irrigation cum drainage canal and perimeter canals should be deep enough and kept always in sound condition to handle this dual function efficiently.



PREPARATION OF BEDS

- Beds should be laid perpendicular to the median canal.
- The ideal bed size for better water management and to undertake cultural operations is 75 - 90 cm (2.5 - 3 feet). The beds may be 3 - 4.5 m (10 - 15 feet) long, 15 - 20 cm (6-8 inches) high, separated by 25 - 30 cm (10 -12 inches) wide drains.





FERTILIZER APPLICATION

-The following levels of fertilizer are recommended:

Basal

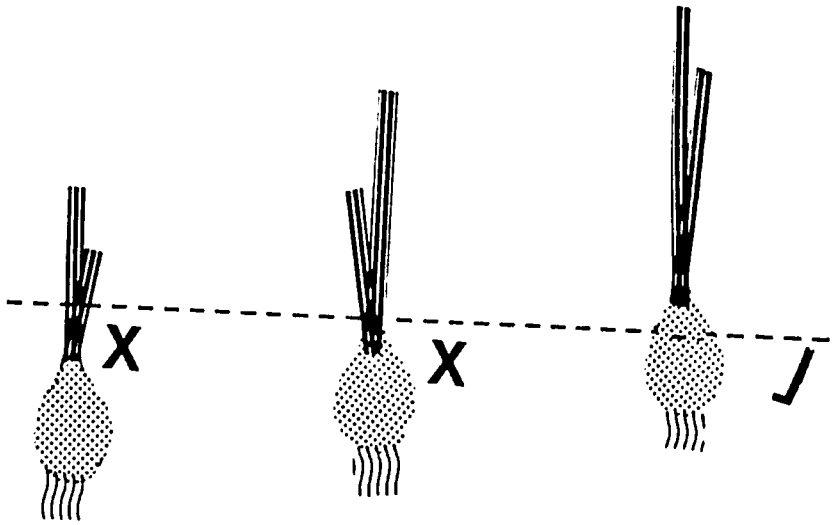
Ammonium sulphate	125 kg/ ha
TSP	125 kg/ ha
MOP	63 kg/ ha

1 st. Top dressing
(at 3 weeks)

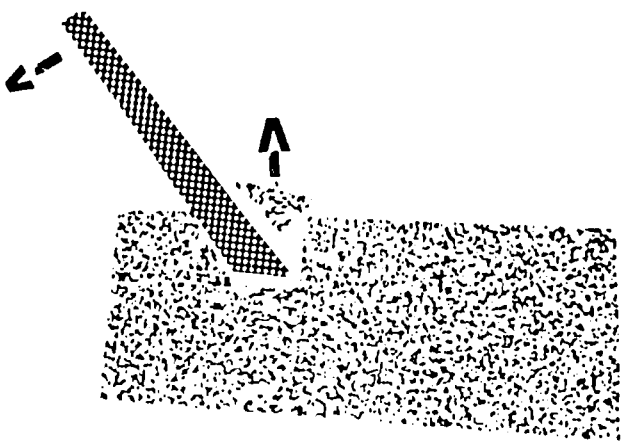
Urea	65 kg/ ha

2 nd. Top dressing
(at 6 weeks)

Urea	65 kg/ha
MOP	31 kg/ha



- Always use a flat splint to make planting holes and press the soil to ensure the roots to get firm contact with the soil particles, while holding the seedling upright. The roots should not be folded in pressing the soil.



- Never mark with a rounded stick or with the middle finger leaving a compacted cylindrical planting hole which will not facilitate the roots to contact with the soils.

- Hand watering, by using a watering can makes the soil to settle down faster and provides moisture instantly to the seedling.

- Provide an irrigation in the evening to soak the beds well.

- Ensure that beds are always kept moist during the first 7 - 10 days by allowing water to soak into the root zone. Never flood the fields.

APPENDIX 2

WEEKLY PERFORMANCE EVALUATION OF AG.EXTENSIONISTS OF MARD

Week Commenced On :..... 1992 Name of Unit :.....

Name of Ag. Extensionist :.....

EVALUATION CRITERIA	MAX.SCORE	SELF EVALUATION	GROUP LEADER'S EVALUATION	IMMEDIATE SUPERVICER'S EVALUATION
PLANNING : Production & extension program, time framing etc.	10			
FARMER AWARENESS : Creation of farmer awareness, meetings, posters etc.	10			
KNOWLEDGE AND SKILL DEVELOPMENT: Farmer training, method demos., use of training material etc	20			
SITE SELECTION: Drainage and irrigation facilities, soils, security, accessibility etc.	10			
FARMER SELECTION	10			
CO-ORDINATION OF INPUT SUPPLY MARKETING AND OTHER SERVICES	10			
FARMER ADOPTION : Recommended agronomic practices, crop performance, field lay-out, quality of commodity produced, yield, profit margin etc.	30			
TOTAL	100			

Signature Of Extension Group Leader : ..... Signature of Immediate Supervisor: .....

APPENDIX 3

DAILY MONITORING SHEET OF EXTENSION ACTIVITIES OF EXTENSION GROUP LEADERS

Name of Group Leader: _____

Date of Visit : _____

NAME OF UNIT	FARM No.	CROP	OBSERVATIONS	RECOMMENDATIONS

Signature of Ext. Group Leader: _____

Date: _____