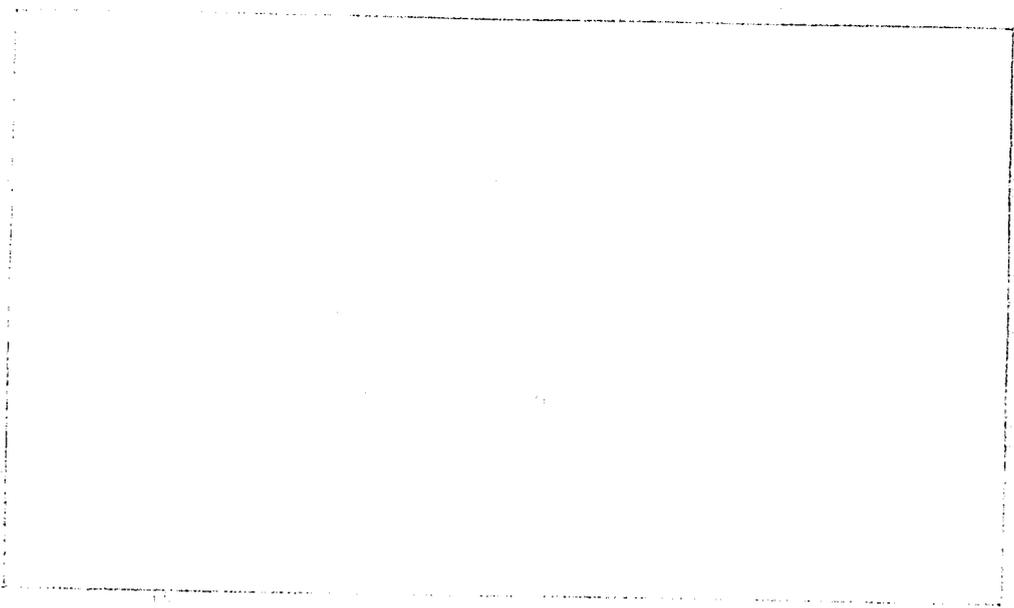


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MINISTRY OF MAHAWELI DEVELOPMENT
MAHAWELI AUTHORITY OF SRI LANKA



Mahaweli Economic Agency

Mahaweli Engineering and Construction Agency

MARD/MDS PROJECTS



Imburattewa
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FUNDED BY THE GOVERNMENT OF SRI LANKA & USAID

MEA/MARD ACTIVITIES
TO SUPPORT POVERTY ALLEVIATION
AMONG MAHAWELI SETTLERS IN SYSTEM 'B'

BY

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MARD/MDS PROJECTS

PIMBURETTEWA

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EXECUTIVE SUMMARY

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Crop diversification is the main pillar of MARD/MDS strategy to increase settler incomes. In Yala 1990, settlers who participated in the crop diversification program (approximately 3000 farm families) had incomes 25% higher than those of their neighbours who grew only paddy.

MARD develops and tests new crops, varieties and technology for farmers by working with them on their own fields. The program includes on-farm trials, whole farm trials and whole turn-out trials. MEA/EIED/MARD working with the Department of Agriculture (DOA) has developed local, System 'B'-specific recommendations for both traditional high value crops, such as onions, red onions, green gram and ground-nut; and for new high value crops such as butternut, gherkins, white onions, spineless okra, melons, and sweet corn. Brand new crops or techniques are tested first on the Mahaweli Seed farm or in the nursery.

MEA/EIED/MARD regularly publishes Sinhala extension booklets specially adapted for System 'B' conditions. These cover specific crops, as well as water management, nursery management, etc. MEA/EIED/MARD also publishes regular Sinhala newsletters for agricultural, farmer organization, and human services extension (Maduru Mahima), and for marketing and price information (Badada Pola). A weekly radio program (Maduru Sandeshiya) also disseminates System 'B'- specific extension messages and news.

MEA/EIED/MARD crop insurance covers farmers who participate in trials, act as outgrowers for the first time and undertake other risky, innovative investments in diversifying their agricultural practices.

MEA/EIED/MARD gives formal training to over 1,000 farmers and youths and to over 250 MASL field agents each quarter. In addition, our field agents give on-site training to many more farmers and youths.

MEA/EIED/MARD has fostered farmer organizations in System 'B' at Turn-Out, Unit and Block level. Many (though not all) of these organizations are working well. They concentrate equally on water management and on income generating activities, such as marketing, or joint cropping. To promote Unit Level organizations, MEA/EIED/MARD is providing two-wheel tractors and trailers to enable them to transport their produce to markets and collecting points. They will also rent the tractors to their members for tillage.

MEA/EIED/MARD has supported the development of youth farms for second generation settlers in all the blocks in System 'B'. We have provided water pumps, barbed wire, seed, inputs, and technical advice to these groups.

To take advantage of seasonal price fluctuations, MEA/EIED/MARD will assist farmers to stock their paddy or other crops until prices rise. MEA/EIED/MARD also provides transport at concessionary rates when required to bring goods to market.

Settlers have limited land available to them, so must take advantage of all their resources. Thus the MEA/EIED/MARD homestead program also concentrates on increasing incomes. Programs to promote goat, duck and chicken raising have begun well, while cultivation of vegetables, medicinal herbs and asparagus also seem promising.

As seed availability and quality is a major constraint on crop diversification, MEA/EIED/MARD has undertaken to supply at cost crucial quantities of seed for popular crops such as big onion, red onion, and pulses. In addition, MEA/EIED/MARD has imported seed for trials and production of export-oriented crops, such as coriander, melons, confectionary quality peanuts, etc.

The MEA/EIED/MARD Central System 'B' Nursery is one of the best equipped and run in the country. Over 75,000 fruit trees will be available for settlers in Maha 1991/92, in addition to large quantities of passion and pineapple, timber trees and ornamentals.

MEA/EIED/MARD have successfully fostered the Sunfrost gherkin outgrower program which has had over 700 participants over the past two years. At this time 304 settlers are growing gherkins for export. A second program in large white onions is just beginning with 84 MEA/EIED/MARD out-growers and 6 working for a commercial farmer.

In the MEA/EIED/MARD Water Management Pilot Zones, farmers learn how best to use water to grow other crops by practising under the supervision of MEA/EIED/MARD specialists. Emphasis on frugal use of water and on drainage leads to encouraging results for the approximately 1,000 participants.

New construction techniques introduced by MEA/EIED/MARD and MECA/MDS engineers have led to better quality infrastructure, adapted to the flexible requirements of other crops, including improved drainage.

MEA/EIED/MARD assists settlers in selling their crops at the best available prices in local and regional markets, in Colombo, and, when possible, overseas. Price information, market training, transport assistance, storage, quality control, packaging and post-harvest handling all help our settlers h= get the best possible deal for their crops.

The MEA/EIED/MARD commercialization fund provides support for risky, innovative ventures by settlers, farmer organizations, youth, women, or commercial entities. To date eight groups of settlers have taken advantage of this fund, while seven other are preparing applications.

Credit has proven a major constraint to crop diversification in System 'B', so MEA/EIED/MARD is negotiating with private banks to get them to set up offices in the area. In addition, MEA/EIED/MARD has arranged special credit programs when needed and intervened with the state banks to streamline their assistance to System 'B' farmers.

**MEA/MARD ACTIVITIES
TO SUPPORT
POVERTY ALLEVIATION AMONG MAHAWELI SETTLERS
IN SYSTEM 'B'**

The Mahaweli Agriculture and Rural Development Project (MARD), jointly funded by the Government of Sri Lanka (GSL) and the United States Agency for International Development (USAID) works to help the settlers of Mahaweli System 'B' increase their incomes from agriculture, agro-industry and related services. MEA, EIED, and MARD (with its sister project, MDS) work together to achieve this objective.

MARD does not have a program separate from that of MEA and EIED in System 'B'. Everything the Technical Assistance (TA) team does is in support of MEA and/or EIED activities. In our reports, we refer to "MEA/EIED/MARD activities" for everything we do.

The principal strategy adopted to assist settlers improve their incomes is crop diversification. Real net returns from paddy have declined dramatically in the last few years. Even a very successful paddy farmer risks indebtedness, hidden tenancy and descent into the vicious circle of rural poverty. However, by growing other crops, both traditional and newly introduced cultivars, farmers can increase their income dramatically, pay off their debts and escape rural poverty. They are then ready to make a real contribution to their personal, local and national development.

To support farmers in their efforts to earn the maximum income from agriculture, MEA/EIED/MARD works in:

- o agricultural extension and adaptive research;
- o horticultural extension and adaptive research;
- o agricultural economics and farm management;
- o on-farm water management
- o main system operations & maintenance
- o farmer organization and enterprise
- o marketing and credit

The GSL and USAID have agreed upon a development strategy for System 'B' which calls for settlers to produce for both the domestic and the export market. The methodology chosen includes the promotion of investments by both large firms from outside the system and by entrepreneurs and groups within the system. These are expected to establish commercial farms, agro-processing units, marketing structures and services such as input supply, credit and other agricultural support activities.

MEA/EIED/MARD are called upon to work with these investors, as well as with settlers, in order to ensure the generation of the synergistic effect planned by those who designed the project. Thus MEA/EIED/MARD provides certain kinds of support to commercial farmers and other investors in System 'B'.

95% of the MEA/EIED/MARD effort in System 'B' directly assists small farmers to increase their incomes and improve their welfare through the alleviation of rural poverty.

To list all of the MEA/EIED/MARD activities which directly benefit small farmers would mean writing a complete history of the project from its inception. To avoid imposing such a tedious exercise upon the readers of this short report, I have chosen to describe only some of the MEA/EIED/MARD and MDS activities which are currently under-way or which are planned to promote the incomes and welfare of Mahaweli settlers.

1. Income effect of crop diversification

In Yala 1990, just under 3,000 farmers (about 30% of those cultivating irrigated land in that season) grew other crops (OCs) on their irrigated allotment. The average income for these farmers was 25% higher than the income of their neighbours who grew paddy only. The total effect was to raise the income generated for all System 'B' farmer by 7%.

MEA/EIED/MARD extension strategy calls on all farmers to grow small extents of OCs to get an idea of how to manage these new crops and of what profits can be gained. Even though the overall hectarage cultivated to OCs was only 3.5% to income effect on participating farmers was striking. The increases in income for the most dynamic farmers were up to 300% above paddy.

In Maha 1990/91, approximately 1200 farmers (about 12% of those cultivating their irrigated allotments) grew OCs. We do not yet have the income effect of this cultivation, but expect it to be in the range of 15-20% for participating farmers, as extents cultivated were small. However, crop values were quite high. One of the end-of-project goals for MEA/EIED/MARD is to have 15% of the farmers cultivating some OCs in Maha. This is nearly achieved. However, we must work to increase the surface area under OC cultivation in Maha as well.

In Maha 1990/91, MEA/EIED/MARD staff noticed a remarkable increase in OC cultivation on homesteads and reserve lands. This is difficult to measure, however. But our general opinion is that farmers who got a taste of increased incomes from OCs in Yala wanted to try again in Maha. But most of them did not feel confident enough to plant OCs on their paddy allotments.

2. On-farm trials

One of the main pillars of the MEA/EIED/MARD diversification strategy is to have farmers carry out adaptive trials and demonstrations themselves, on their own fields. This serves several purposes:

- o farmers learn the new techniques or new crops by doing or growing them;
- o farmers' neighbours can directly observe the results of new techniques or cultivars; and
- o extension staff get insight into how farmers are able to manage the new crops and techniques. They can thus solve problems quickly and prepare appropriate extension bulletins.

Beginning with Yala 1989, MEA/EIED/MARD have carried out an average of 150 on-farm trials per season. Thus approximately 700 farmers have participated, in all blocks and most units of System 'B'.

These trials have led to the introduction of new crops to System 'B' (some new to Sri Lanka, some new to the dry zone, some new only to System 'B'), to the reduction of costs of production, to increased yields, and to more effective crop management techniques. (see below No. Agricultural Innovations)

MEA/EIED/MARD provide the seeds, inputs and technical advice for these trials. The farmers provide land, water and labour. The farmers keep the harvest.

All participating farmers are covered by MEA/EIED/MARD crop insurance (see below No. MEA/EIED/MARD Crop Insurance). However, over 90% of the trials have proved successful, leading to incomes above those earned from paddy for participating farmers, as well as to important lessons for extension to all System 'B' settlers-farmers.

3. Whole farm trials

After two seasons of successful on-farm trials, and many useful lessons learned, MEA/EIED/MARD moved to whole farm trials, where settler volunteers plant much of their entire allotment to other crops, with a varying proportion in paddy. The crops and surface areas come from MEA/EIED/MARD studies of the labour and capital requirements of the crops which can be grown here; from the soil types and irrigation status of the farm; and the yield and price of the crops. In Yala the land in OCs varies from 50% to 85%, while in Maha it varies from 25% to 50%.

In any given season, there should be 14 to 16 farmers carrying out whole farm trials. However, security considerations have limited trials in Sinhapura and Aselapura block this Yala. To date, approximately 20 farmers have participated in the trials, where MEA/EIED/MARD provide inputs and technical assistance and the farmers provide land, labour and water. The farmers keep the harvest.

Participating farmers are covered by MEA/EIED/MARD Crop Insurance, but to date none have had to claim. Increases in income for participating farmers have ranged from 50% to 300%.

The demonstration effect of whole-farm trials has already shown itself, as a few farmers throughout the system have begun putting large amounts of land into OCs.

4. Whole Turn-Out Trials

Following the initial success and lessons learned from the Whole-Farm Trials, MEA/EIED/MARD has this season initiated a series of Whole Turn-Out Trials. Here, all the farmers in a Turn-Out Group (an informal farmer organization formed and strengthened with the help of MEA/EIED/MARD extension personnel- CDOs, UMs, ICOs, etc.) agree to use the land in their turn-out in the most efficient way to increase the income of participating members.

Farmers may practice a sort of Betma or Kattimaru type land sharing, where the well drained land at the top of the turn-out is used for OCs and the poorly drained, heavy soils at the bottom are used for paddy. In other cases, the individual allotments are maintained and farmers share the work of nurseries, drainage works (during one massive shramadana in Dimbulagala Block, 250 people cleared and deepened over 5 kms of field and boundary drains in one day), input supply, wild animal control, and other tasks.

This first season, MEA/EIED/MARD are supporting two such trials (Bogaswewa and Ruhunukette), while at least 5 other turn-outs have decided to pursue this strategy on their own, with only technical assistance from MEA/EIED/MARD (Medagama [2], Bogaswewa [2]). Thus approximately 30 farmers are in the MEA/EIED/MARD supported program, while approximately 75 others are receiving technical assistance - i.e. intensive extension work - but no material support. The final whole turn-out trial is in Mahadamana Unit. There, farmers are carrying out a twelve month whole-turn-out program, under the supervision of the DRPM/WM, with MEA/EIED/MARD financial and technical support.

Initial results from this program seem very positive. We will publish the income effect after the end of the harvest.

5. On Station Trials

MEA/EIED/MARD staff regularly bring new crops and new techniques to try in System 'B'. Some of these go directly to farmer-managed trials, as above. However, for certain crops, we feel that a season or two of on-station trials is required before we ask farmers to try them out. Even with MEA/EIED/MARD crop insurance, farmers get discouraged by failed experiments, whatever the lessons learned from them.

Thus new crops like strawberries, melons, black beauty eggplant, Clemson spineless okra, zucchini, sweet corn and jalapeno peppers (among many others) get their first exposure to System 'B' on the mahaweli Seed Farm or on the RARC/Aralaganwila. If successful they then are extended to farmers. Examples are spineless okra, sweet corn, zucchini, and large white onions.

In other circumstances, where we try a crop in a new season, like potatoes or carrots in Yala, we prefer to try it on the seed farm or research farm first. Or where an expensive input may be recommended, on-station trials are recommended before extension.

However, MEA/EIED/MARD does no basic research in any field. This is the province of the Department of agriculture. We do only adaptive trials, which lead directly to local recommendation for extension to settlers.

6. Extension Publications

The results of the trials mentioned in sections 2,3,4 & 5 above come quickly to the notice of farmers and extension personnel through informal publications. The recommendations made include the Department of Agriculture standards, modified for System 'B' through local adaptive research, both on-farm and on-station, as above. These publications are not for national use. Their recommendations are locally generated and tested and are thus appropriate only for the milieu from which they spring: the settler farmers of System 'B'.

Publications are all in Sinhala. Those issued to date include:

Gherkin cultivation
Weed Control for Paddy
Pond management for Ornamental Fish
Pond Management for Food Fish
Potato Cultivation
Disease Control for Paddy
Cowpea, Greengram and Black Gram Cultivation
Ground-Nut and Cowpea Cultivation
Courgette, Okra and Sweet Corn Cultivation
Ground-Nut Harvesting, Drying and Storage
Chillie Cultivation
Cabbage Cultivation
Carrot Cultivation
Potato Cultivation (2nd edition)
Beet Cultivation
Capsicum Cultivation
French Bean Cultivation
Farm Management Record Keeping
Chillie Cultivation (2nd edition)
Big Onion Cultivation
On-Farm Water Management for OCs
Nursery Management
Irrigation Infrastructure Maintenance for Farmer
Organizations

Some of these bulletins are mimeographed leaflets, others are printed professionally and sold at highly subsidized rates to farmers (cost Rs 15/-, sales price Rs. 2/-).

Over 50,000 have been distributed to date. Farmers' reactions have proven very positive so far. The language in the bulletins is simple and there are many illustrations.

7. Agricultural and Horticultural Recommendations

MEA/EIED/MARD have not made any striking advances in agronomic science and will not do so. This is not our role. Thus, some may contest the use of the word "innovation" to describe our work with settlers in System 'B'. I believe it is appropriate, for we have brought to the settlers here new ideas, new crops, new techniques, new management approaches and tools, new combinations of methods and cultivars - new to them, new to System 'B', and, in many cases new to the dry zone and to Sri Lanka.

None of the advances noted below are, in and of themselves, revolutionary. However the cumulative effect of their testing and implementation in System 'B' will contribute directly to increased settler income and welfare and to the alleviation of rural poverty. These innovations may increase yield, may lower costs, may lead to more work for the farmer or less. But they will all help those who apply them to earn more income from the limited resources at their disposal.

A representative (but far from exhaustive) list of such recommendations might include:

- o reduce fertilizer applications on pulses by up to 50% from DOA recommended levels;
- o increase onion fertilizer by 25% over DOA recommended levels;
- o reduce onion spacing to 3'x3' to increase density and yield;
- o use cow-dung, mulch and high raised beds to combat the effects of NLD on chillies in Yala;
- o grow chillies as a maha crop on irrigated allotments for high yields and off-season prices, and to avoid NLD;
- o Avoid contamination of OC fields with phenoxy herbicides used commonly on paddy;
- o plant ground nuts before the end of May to ensure maximum yields;
- o Weed control is vital to successful OC production. In many cases, herbicide use (with weed wiper or by hand) is cheaper and more efficient than hand weeding. Weeds cut OC yields dramatically;
- o Cow dung will increase the yields on most OCs when mixed in the soil;
- o Water management for OCs is very different from that for paddy. In most cases, less is better, but intervals must be frequent;
- o Farm record keeping is crucial to effective management of settler allotments. All settlers who wish to increase incomes should manage intensively and carefully. This requires records of costs, inputs,

- o labour, yields, sales prices, etc;
- o extension recommendations should emphasize profits and income, rather than nutrition;
- o pulses are good money-makers if yields are high. This requires more intensive management than paddy;
- o drainage is essential to successful OC cultivation in System 'B'. Without drains, only about 12% of System 'B' is suitable for OCs. With low-cost farm and boundary drains, the proportion goes up to aver 75%;
- o Up country crops will grow successfully in System 'B': potato, beet, carrot, sweet corn, capsicum, etc.
- o High value horticultural crops will prosper here - grapes, melons, bananas, zucchini, fancy okra and eggplant, jalapenos, Japanese eggplant, asparagus, etc. Markets exist and there is high demand for these crops. However, farmers need access to processing infrastructure before they can think of large scale production.
- o etc., etc. etc.

The farmers who are applying these lessons are earning more money than those who are not.

8. Other Extension Tools

In addition to regular visits to farmers fields, training for farmers, and extension booklets noted in section 6., above, MEA/EIED/MARD publish two other extension tools:

- o Maduru Mahima is a monthly news and extension bulletin in Sinhala for settlers, Mahaweli officials and extension personnel in System 'B'; and
- o Badada Pola is a bi-weekly market information bulletin, which gives farmers and extension personnel here prices for their produce in local polas and regional markets in Kaduruwela (Polonnaruwa), Kandy, Colombo and Anuradhapura. It also includes articles about post-harvest handling, quality control, packaging and marketing strategy. A recent study indicated that farmers do read and appreciate this publication. The study suggested expanded publication and sales.

Finally, MEA/EIED/MARD sponsors a weekly radio show on Rajarate Seviya, called Maduru Sandeshiya. This 30 minute show gives extension messages, news, market information, and other features. Farmers seem to listen to and like the show.

As part of the Pola Improvement Program, MEA/EIED/MARD will build new infrastructure at all the weekly polas in System 'B' and will set up extension booths at these markets, where messages and posters will be displayed, agents will offer advice and explanations about farmers' problems, and bulletins will be sold or given away.

At this time, MEA/EIED/MARD is filming a tele-docu-drama about System 'B' settlers and their efforts to improve their lives. A second tele-drama is also planned to bring the real story of the settlers' struggles and successes to the screen.

9. MEA/EIED/MARD Crop Insurance

Innovative farmers take risks and MEA/EIED/MARD encourages them to do so. To alleviate the possible negative effects of such praise-worthy, entrepreneurial behaviour by farmers, MEA/EIED/MARD have established a crop insurance program.

All farmers are covered for fields cultivated under:

- o MEA/EIED/MARD on-farm trials, whole-farm trials, or whole turn-out trials;
- o outgrower arrangements for new crops or in a new season;
- o demonstrations of new techniques or crops; or
- o in other circumstances determined by the RPM/System 'B' and the COP/MARD.

To date over 100 farmers have been paid under this scheme. The vast majority came from the first Maha gherkin outgrower program, where confusion about sorting and grading gherkins led to losses on the part of the farmers. Other pay-offs have come from a failed garlic program on homesteads and from on-farm trials where drainage, wild animals or other problems hurt the crop.

10. Farmer Training

During the first six months of 1991, over 2500 farmers, and youth, including over 500 women, participated in formal training programs sponsored by MEA/EIED/MARD. During the same period over 500 MEA and EIED officers underwent training as well. At the same time, a far greater number of farmers, youth and women benefitted from in-the-field extension training from MEA/EIED/MARD staff.

Formal Courses included:

- o B-onion nursery management
- o Community Leadership and Organization
- o OC water management
- o drainage practices
- o OC transplanting
- o goat farming
- o poultry farming
- o crop specific training
- o fertilizer and agro-chemical use;
- o etc.

Training goes on at the MRTC, at Block Offices, Unit Offices, and in the field. The field programs are specially popular, usually attracting over 100 participants. MEA/EIED/MARD provide transport, tea, and meals for all these programs. We also provide all training materials and equipment. Farmers have been very enthusiastic about the results of these programs.

11. Farmer Organizations

Established at Turn-Out, Unit and Block level; Farmer Organizations (FO) are the basic building blocks of successful and sustainable development programs for farmers. MEA/EIED/MARD have helped farmers at all levels hold elections, establish constitutions, open bank accounts, conduct shramadanas, and undertake income generating activities. Of the 55 Unit Level FO (ULFO) required in System 'B', between 20 and 25 are now sufficiently strong to satisfy the criteria for registration with MEA/Colombo under IMD regulations. We are working with the others to prepare them for this step. All are registered with MEA/Welikanda.

Many ULFO now have women's or youth organizations associated with them.

Specific MEA/EIED/MARD programs with FO include:

- o 2 ULFO in Senapura Block are growing local papayas on highland for processing in Colombo (KV Cannery and Lanka Cannery have agreed to buy all the production);
- o 2 ULFO in Ellewewa Block are growing Solo Hawaii papaya for the export market and for local high-value markets;
- o Seven ULFO have organized youth or women to establish highland farms to grow OCs. MEA/EIED/MARD Provide each with a pump and barbed wire, as well as access to a canal or well. In general, each youth or woman has .5 acre to farm. In all there are about 100 members of these farms. ULFO included are Pimburettewa (2), Ruhunukette, Aluthwewa, Kalukelle, and others. This program will expand to all units within a year.
- o 2 ULFO women's organizations are trained for sun-drying of tropical fruit. These are in Bogaswewa and Pahala Ellewewa.
- o One group of ULFO women from Medagama Unit have trained to pickle and jar gherkins and other crops.

Block Level FO in Dimbulagala and Sevanapitiya rent lorries from MEA and ship fruits and vegetables to Colombo each week.

Block Level FO in Zones 1 & 5 have combined to ship papaya to Colombo for processing and export to Japan. Six loads have gone to date and farmers earn between three and four rupees per kilo, as opposed to one or two rupees, if sold locally. MEA/EIED/MARD provide cash advances to the farmers when required, as well as the lorries at a cheap rate.

Through 31 March 1991:

- 36 ULFOs maintain their own offices.
- 50 ULFOs have weekly work committee meetings, submit cropping plans, and weekly aggregate water requirements
- 35 have undertaken contracts for canal cleaning and maintenance
- 15 have purchased inputs collectively to obtain discounts
- 15 have arranged informal or formal credit for members
- 49 ULFOs assisted with the sales of members produce, either canvassing for highest prices or negotiating with buyers

12. Two-wheel Tractor Program

MEA/EIED/MARD have purchased twelve two-wheel tractors and 1.5 tonne trailers for the best ULFO in System 'B'. They will be distributed before the end of this Yala. The ULFO will manage these tractors to generate income, but particularly to solve two pressing problems:

- o transport of members goods to marketing or collection points; and
- o to alleviate the shortage of traction power for land preparation.

Funds are available to purchase 2-wheel tractors for all ULFO, as they become strong enough to manage them successfully.

In conjunction with this program, MEA/EIED/MARD Commercialization Fund resources will help a local entrepreneur trained by EIED to set up a parts and repair shop. The company selling the tractors has a representative in Girandurukotte and has agreed to establish such an agency in System 'B', and to train the selectee. MEA/EIED/MARD has selected the entrepreneur and this agency should open soon after the tractors arrive.

At the harvest in Yala 1991, MEA/EIED/MARD will provide a small number of hand and mechanical threshers to Youth organizations associated with these ULFO to provide income and employment for the youth, and to liberate labour for OC harvest and post-harvest handling.

13. Storage and Transport Programs

At this moment, MEA/EIED/MARD are carrying out an inventory of the available storage facilities for paddy and OCs in System 'B'. MEA/EIED/MARD will finance required modifications and ULFO will take over these stores to use to keep their crops until they, with MEA/EIED/MARD assistance, identify favourable markets.

Stores will be modified for paddy, green-gram, cow-pea, black-gram, onion, and other crop storage.

Two 40 foot reefer containers have been purchased for System 'B' and will serve to store settlers produce, especially fruit and vegetables, for shipment to Colombo and overseas markets. These are located at the Dammina Block Office at the MARD Office in Pimburettewa Unit. MEA/EIED/MARD have funded the repair of two cold rooms at the MRTC in Vijayabapura Block for the same purpose.

MEA has agreed to rent lorries to ULFO and Block Level FOs to transport their produce to Colombo. These lorries are given at concessionary rates, which barely cover the operating cost of the lorry. Farmers learn to manage the lorries intelligently to maximize their profits and to capture and keep markets.

MEA/EIED/MARD will soon propose to MASL and USAID the purchase of several small busses to give to ULFO to service forward areas where private and SLTB busses cannot go.

14. Homestead Programs

MEA/EIED/MARD feel that settler families can derive significant income from small-scale activities on their homesteads. On-going programs include:\

- o goats: MEA/EIED/MARD has brought 81 superior breed goats to System 'B' for 20 families. We have conducted training programs on how to take care of these goats. Another 120 goats for 30 more families will come as soon as they are available. This program is concentrated in Senapura and Aselapura Blocks, where families have built sheds and agreed to stall-feed the goats. A castration program is also underway to ensure the improvement of the overall goat population in System 'B';
- o ducks: 32 families have successfully raised day-old ducklings and sold them for good profits. There is great demand for more ducklings. MEA/EIED/MARD provided the ducklings and the technical assistance and training;
- o chickens: 15 families have 250 hens producing eggs now, for two women's groups. MEA/EIED/MARD provides chicks and training, as well as technical assistance. Another 50 families in five women's organizations will receive chicks this week;
- o asparagus: over 500 families are growing small plots of asparagus in their homesteads in Dammina and Sevanapitiya Blocks. MEA/EIED/MARD provided crowns, inputs and technical assistance. MEA/EIED/MARD also cover this crop with our insurance program and guarantee a market for the first outputs;
- o medicinal plants: five farmers are growing katuwalbatu under a joint trial program with the CISIR. At the same time, trials are underway at the seed farm, RARC, and nursery to generate seed for further trials and to test cultivation techniques for this crop as well as Hibiscus (kapukinissa).
- o vegetables: MEA/EIED/MARD have provided seed, inputs and technical assistance to 50 families who grew up-country vegetables on their homesteads last Maha. This program was very successful, but contributed more to nutrition than to income. The farm families ate most of the crop!

15. Seed programs

For the last several years, seed for OCs has posed an acute problem for System 'B' farmers. DOA sources provided irregular supplies, while recommended varieties were often not available. DOA big-onion stocks have had poor germination and other problems.

Big Onion

For the past two Yala seasons, (1990 and 1991), MEA/EIED/MARD has advanced money to purchase stocks of privately imported onion seeds in one kilo tins for resale to farmers. Administered by MEA/EIED/MARD officials in the field, these programs have had reimbursement rates of over 90%. In 1990, MEA/EIED/MARD provided 500 kg of seed, while in 1991, demand was over 1250 kg of seed. In 1990, MEA/EIED/MARD also pre-financed onion seed for System 'H', which was 100% reimbursed.

Red Onion

In 1990 Yala, red onion cultivation almost disappeared from System 'B' as the price of seed bulbs went over 60 Rs/kg. In 1991, the price fluctuated between 90 and 120 Rs per kg. Farmers complained bitterly. MEA/EIED/MARD teams went to Vavuniya at the height of operations there and obtained over 15 tons of seed at Rs. 30-40/kg. We retained 2 tons for multiplication and distributed the rest at cost through Block and Unit offices. Next season, we hope to have 16 tons for distribution to farmers at reasonable cost. Without this program, red onion cultivation in System 'B' would have been negligible this season.

Coriander

Sri Lanka imports large quantities of coriander each year, whereas it should grow well in System 'B'. MEA/EIED/MARD is currently testing this crop on a large enough scale to provide large quantities of seed for next season, if it grows as expected.

Sugar baby watermelon

After homestead trials last year, which were agronomically successful - we learned nothing about the marketing of the crop because families ate the delicious melons themselves - MEA/EIED/MARD is carrying out larger scale field testing and seed multiplication. If this trial goes well, the crop will go out for farmer testing on irrigated allotments next season.

Mahaweli seed farm

The seed farm has begun this year to grow OCs for seed multiplication, given problems with supply in previous years. They have concentrated on chillie seed and on ground nut seed. The latter are large confectionary varieties provided by ICRISAT. After a first multiplication in Maha 1990/91, the seed farm will multiply them again this Yala, while 10 farmers have the seed for on-farm trials. The seed farm is also multiplying some pulses. MEA/EIED/MARD provides logistical, material and technical support to the seed farm for these programs which will be of great benefit to settlers, who will now have a reliable source of high quality seed for certain OCs. The manager of the seed farm should be congratulated for this transformation.

16. Other Planting Materials

If System 'B' settlers are to capture domestic and export markets for fresh and processed fruits, they need supplies of high quality planting materials of the proper, market-tested and acceptable varieties. Many such varieties exist in Sri Lanka, but are scattered in non-commercial concentration throughout the island. MEA/EIED/MARD has collected these materials in System 'B' to generate both grafted and budded trees and plants for settlers and a mother-tree nursery for the creation of a permanent source of planting materials. These are concentrated in the MEA/EIED/MARD Central Nursery in Medagama Unit.

The Central Nursery

MEA/EIED/MARD has equipped the System 'B' Central Nursery with irrigation equipment which makes it the best nursery in the mahaweli and possibly the best in Sri Lanka. This investment will directly benefit the settler farmers who will now be able to obtain high quality grafted fruit trees, difficult-to-germinate species, and delicate rooted cuttings of valuable, export quality fruit varieties. The central nursery provides free trees to new settlers, who will now receive high-yielding, export quality trees. It also sells trees at concessionary rates to established settlers and at commercial rates to businessmen and commercial farmers.

The nursery will have a great many trees available for planting during the Maha 1991/92 rains:

Wood apple - 2,000 trees of selected local varieties

Mango - 6,500 trees of Alfonso, Hayden, Tommie Atkins and Sensation (EXPORT VARIETIES), and 10,000 of Malvani (the best local variety)

Lime - 10,000 Tahiti Lime

Papaya - 20,000 or more Solo Hawaii. Seed are available to do as many as required

Coconut - 14,000 for settler homesteads (disease free, unselected varieties) and 2,000 selected dry zone varieties for ULFO plantings on highlands or for settlers with 1 ha highland allotments.

guava - 2,000 of large, processing guava for juice or pulp

cashew - 8,000 of selected local varieties

jak - 6,000 of selected local varieties (mostly waraka)

passion - more or less unlimited quantities available. Production will depend on demand. Mostly yellow passion for processing. Some purple, but this has not been successfully tested in Dry Zone yet.

pineapple - the MEA/EIED/MARD nursery is carrying out a smooth cayenne pineapple multiplication program under contract to ACDI, an American NGO working in Colombo. Their experts have said that System 'B' is not an ideal place for pineapple cultivation, but the climate is ideal for the multiplication of planting materials. ACDI has contracted to purchase most of the planting material we generate for commercial farmers in the wet zone. This will generate operating capital for the nursery. However, they have also agreed that MEA/EIED/MARD may keep as much planting material as we require for our settlers, who want to grow for the local market or for drying. Thus the quantity available will depend upon demand.

Smooth cayenne is a high yielding processing pineapple which is the current international standard for both fresh and processed markets.

The MEA/EIED/MARD central nursery will thus have over 75,000 fruit trees available for distribution for Maha 1991/92. In addition, large quantities of passion and pineapple as well as additional papaya can be available if required.

First priority in distribution will be new settlers, followed by established settlers who wish to improve or increase the production of fruit. Once these two markets are saturated, System 'B' commercial farmers may purchase trees, followed by farmers from other systems or other parts of the island.

By 1992, the mother tree nursery will produce large quantities of budding and grafting material and cuttings for rooting. Thus the nursery is now growing a great deal of root-stock from local variety seed of mango and citrus, as well as wood-apple.

17. Outgrower Programs

MEA/EIED/MARD have encouraged and supported outgrower programs in System 'B' where commercial farmers, under the EIED land distribution plan, are supposed to grow export crops on a nucleus estate and contract with settlers to grow additional quantities of the crop on their own land. To date, only one commercial farmer has successfully used this approach: Sunfrost Gherkin Growers.

In 1989 Yala, MEA/EIED/MARD helped Sunfrost organize their first group of outgrowers. MEA/EIED/MARD identified the growers, trained them, helped them procure inputs (except seeds which came from SunFrost), and provided extension services. MEA/EIED/MARD provided crop insurance for the growers for this season and the subsequent Maha as well.

Sunfrost quickly moved to organize their own extension and input supply service. MEA/EIED/MARD's role since then has limited itself to trials (we came up with fertilizer recommendations which reduced use by 75%, saving several rupees per kilo on the cost of production; and we are now working on reducing pesticide use through integrated pest management) and to problem solving. We have issued a gherkin extension bulletin and helped negotiate price and grading standards when there have been disagreements between settlers and the Commercial Farmer. This season 304 settlers are growing first-crop gherkins. many of these plus approximately another 100 will grow the second crop.

Only one other of the EIED selectees has entered an outgrower relationship with farmers, and this on a very small scale. The A.I. Earthmovers farm has six outgrowers in Ruhunukette Unit for their large white onion program.

MEA/EIED/MARD have identified several crops which are ready for out-grower/commercial farmer collaboration. These include okra, white onions, ground nuts, and certain vegetables. There are identified overseas and local markets for these crops and cultivation techniques and costs are well known. Once the System 'B' cold chain is operative, the number of crops will grow dramatically.

Where EIED selectees are not ready to undertake out-grower operations, MEA/EIED/MARD may, in special circumstances, play the role of nucleus farmer. This is particularly true where MEA/EIED/MARD has procured export orders. Thus 84 farmers are growing 5 hectares of large white onions for export Singapore, while 14 farmers are growing 1.4 hectares of okra for export to the Middle East.

During Yala 1990, approximately 200 farmers in Dammina Block (Dammina and Nidanwela Units) grew Zucchini, sweet corn and okra for export test-marketing. The program went well, but until the cold chain is in place, cannot be expanded.

18. Water management Pilot Zones

On-Farm Water Management (OFWM) is the most crucial single technique which System 'B' farmers must acquire to grow profitable OCs. System 'B' is water rich and farmers tend to react to OC problems the way they react to paddy problems: put on more water. For OCs this is destructive, often ruinous.

MEA/EIED/MARD have set up OFWM Pilot Units in seven blocks in System 'B'. The program in Sinhapura will begin next season, if security improves and settlers remain. In these Pilot Units, intensive training and extension by MEA/EIED/MARD personnel encourage farmers to maintain and operate their irrigation infrastructure to give themselves the most control over and flexibility in the use of water for both paddy and OCs. MEA/EIED/MARD also repair irrigation infrastructure and furnish planks for more efficient water control.

In all pilot areas, drainage receives a very high priority, as farmers learn the importance of getting the water off their fields.

More than 1,000 farmers participate in these programs.

19. Construction Innovations

System 'B' was initially constructed for 200% paddy cultivation. The GSL's new push to help farmers diversify the cropping patterns and earn more income to alleviate rural poverty has led to the need for better, more flexible irrigation infrastructure, both in forward areas and in established parts of the system.

In the forward areas, MECA/MDS staff worked out a new blocking out technique, which maximizes the slope on all allotments where natural slopes are under 2%. This allows for maximum drainage and thus for increased potential cultivation of OCs.

Intensified quality control, modified structure designs, and cost saving innovations by MECA/MDS, such as the elimination of extensive toe filter construction when not required, ensure that new construction will last longer and serve settlers better.

MEA/EIED/MARD and MDS staff perceived from the outset of the project that the irrigation infrastructure in Zones 1 & 5 required extensive modification to adapt to the requirements of diversified agriculture. MASL and USAID have agreed to the transfer of nearly \$5 million of MDS funds to increase the capacity of irrigation infrastructure in Zones 1 & 5 to cater to farmers producing a wide range of crops in addition to paddy.

20. Marketing Arrangements

Farmers know that there is little point in growing crops they cannot sell. One reason farmers like paddy is that it is easy to store and sell, whatever the price. Most OCs are more perishable and their markets less well organized than that for paddy. MEA/EIED/MARD has helped System 'B' farmers sell their OCs at advantageous prices for the past three years.

We have established contacts with wholesalers and retailers in Kandy, Dambulla and Colombo; as well as with local middle-men. These companies come to System 'B' to collect produce or else MEA/EIED/MARD helps farmers arrange transport to take the produce out. To date, the only marketing problems encountered have had to do with farmers in isolated parts of the system, for whom transport has not been available in time. The 2-wheel tractor and trailer program is meant to solve this problem.

As more and more merchants come to the System 'B' Polas to buy produce as well as to sell their wares, MEA/EIED/MARD has embarked on a program to upgrade all seven of our weekly Polas. Approximately Rs. 150,000 per Pola will help construct sanitary facilities, permanent sheds, and water supply.

When the cold chain comes into operation, MEA/EIED/MARD will lease or sell lorries to ULFOs to bring produce to the pack-house, where the operators will buy directly from them. Farmers are learning to manage transport operations from the on-going lorry renting program to carry papayas, and other fruits and vegetables to Colombo.

MEA/EIED/MARD has initiated an on-going series of marketing training tours to Colombo for System 'B' farmers. Groups of 30 individuals from one block visit wholesale markets and retail outlets in the capital to learn about packaging, quality standards and pricing trends from the market operators themselves. One result of these trips has been the formation of the Sevanapitiya Production and marketing Organization, which has built permanent stalls at the Block Pola site and sends regular shipments of fresh produce to Colombo.

21. Commercialization Fund

MASL and USAID have set aside funds to encourage risky and innovative agricultural and agro-enterprise ventures in System 'B'. The "CommFund" to date has helped one group of settlers in Arunapura to begin setting up an ornamental fish breeding station. Seven women's groups are raising chickens for eggs and meat thanks to CommFund support. Projects are under preparation for

- o a System 'B' youth will set up a parts and repair shop for two-wheel tractors
- o a System 'B' youth will establish a seed supply shop for OCs
- o a System 'B' youth will set up an agricultural input shop for safe agro-chemicals for OCs and for fertilizer
- o two groups of second generation women have proposed setting up small-scale fruit drying activities
- o several women's groups will undertake mushroom cultivation and processing

The CommFund also supports large agro-enterprises which undertake risky investments in System 'B'. One criteria for obtaining CommFund support is the prospect of using outgrowers to supply processing facilities or to supplement nucleus farm production.

CONCLUSION:

MEA/EIED/MARD devotes nearly all of its resources to the effort to help settlers and second generation youth in System 'B' earn better incomes and improve their welfare. This battle to help alleviate rural poverty is slow and difficult. But System 'B' farmers and officials are working courageously together and MEA/EIED/MARD hope fervently that in the end the settlers will earn enough from their small plots of land to afford a decent life for their families on the Sri Lankan frontier.