

**Review of Constraints to  
Commercial Agricultural Development  
in Sri Lanka**

**August, 1990**

**USAID No. 383-0249-C-0039-00**

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# I. OVERVIEW

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## Terms of Reference and Format

The Pragma Corporation was awarded contract No. 283-0249-C-0039-00 by the Agency for International Development to carry out the Review of Constraints to Commercial Agricultural Development in Sri Lanka. The terms of reference (TOR) focused on the identification of key constraints to development of commercial agriculture, with special emphasis on development of small farm agriculture and on growth of agricultural value added and agricultural exports. The review will include recommendations to the Government of Sri Lanka (GSL) and to USAID on possible project interventions to promote commercial agricultural development. *Please note that the views expressed in this report are those of the team members and not necessarily those of USAID/Sri Lanka.*

The Pragma Corporation proceeded to field four consultants during the period June 3 - July 24, 1990 to accomplish the TOR. They, and their specialties, were:

*Michael E. Evnin* - Agribusiness (Team Leader)

*Aly M. Lasheen* - Technology, with emphasis on Horticulture

*Cesar A. Amarin* - Marketing and Credit

*William C. Thiesenhusen* - Land tenure

Each consultant was asked to identify and assess the present situation in Sri Lanka as per the following clauses to the overall TOR.

### *Agribusiness*

- Identify major constraints to expansion of agricultural exports and to development of value-added processing of agricultural products;
- Assess impacts of government policies on agribusiness development;
- Assess role of cooperatives and other farmer organizations in development of commercial agriculture;

### *Technology*

- Assess the organization and capacity of the agricultural research system (both government and private sector) for supporting commercial agricultural develop-

ment (especially to provide technology for high value horticulture and export crops):

- Assess organizational arrangements and regulations governing importation and dissemination of plant and animal germplasm;
- Assess private sector linkages for access to agricultural technology from abroad;
- Assess current extension systems and programs and their adequacy to support commercial agricultural development for small farmers, commercial firms and medium-sized farmers;
- Assess adequacy of current technical agricultural education to support commercialized agriculture;

#### ***Marketing and Credit***

- Assess adequacy of current market information systems and marketing research and development programs in both public and private sector;
- Assess organization and functioning of current agricultural product markets;
- Assess impacts of current agricultural pricing policies;
- Assess adequacy of agricultural input supply systems;
- Assess adequacy of agricultural credit systems;

#### ***Land Tenure***

- Assess current legislation, regulations, and procedures governing land titling and land markets;
- Assess impacts of current land tenure policies on commercial agricultural development;
- Assess impact of state owned plantations on productivity of plantation crops;
- Assess current policies affecting operation of irrigation systems and their effect on commercial agriculture;

Each consultant was also asked to make recommendations. The combined clauses:

- Recommend possible changes in agribusiness and farmer organization policies, programs, and/or organizations which may promote development of commercialized agriculture.
- Recommend changes in research, extension, education and germplasm policies and programs which would support commercial agricultural development.
- Recommend possible changes in marketing, pricing, and credit programs and policies which would support commercial agricultural development.
- Recommend possible changes in land tenure policies and institutions which may promote development of commercial agriculture.

The consultants have prepared responses to the above in, more or less, a similar format, by first providing the assessments and then corresponding recommendations. In both cases, subjects were prioritized within each section. The Land tenure section digresses from this format as the consultant felt another format would better serve his subject matter. Also, due to subject matter, that section is based significantly on written reference material. The other sections are based largely on personal interviews.

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## II. EXECUTIVE SUMMARY

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The assignment for this team has involved the need to make numerous observations on a multitude of topics. Each consultant has then drawn upon his professional experiences to make a series of recommendations. Due to the subject matter, an executive summary, in the traditional sense, could almost be as lengthy as the text itself. This being the case, the Team Leader, in preparing this opening chapter, has sought a somewhat different format. The following executive summary will not try to incorporate all the points in the text even in the briefest form. Instead, it will attempt to locate themes which either independently pervade the observations of the different consultants or seem to occur repeatedly within an individual consultant's observations.

The first major theme seems to be, in a word, *fragmentation*. The Government of Sri Lanka itself is in too many parts at all levels. Not only are there too many ministries, but the ministries themselves are burdened by an overabundance of departments and agencies. Many natural opportunities for amalgamation, and therefore efficiencies and regulation, have been lost. A glaring example of this is in the area of research. We have recommended centralization of the research functions which are presently housed in various centers and ministries.

The government wishes to create commercialization and diversity, especially in horticultural crops. This can be achieved by means of research, extension services, and teaching. The creation of a Research Center, which would be an amalgamation of existing entities, would assist in achieving the government's above stated goal.

As an aside, we wish to point out that the government's new goal promoting commercialization in addition to self sufficiency means a fundamental change in policy. Therefore, the government will need to continue supporting its entities concerned with planning. The land tenure system is another example of fragmentation. Parcels of land, under single management, are much too small to allow for the efficiencies of scale necessary for profitable enterprise. From a social point of view, there are advantages to each farmer having his own plot. From an agri-business point of view, this sort of fragmentation - if the plots produce small amounts of raw material - is counter productive. Agro-processors need to have more than only a few sources of raw material, but too many create difficulties. In the absence of medium to large size estates, we believe that well organized farmers' cooperatives would be the solution.

We should note at this point that the word "Cooperative" seems to have more than one meaning. Throughout this report, we will use the words Cooperative and Co-op in the traditional sense. That is to say, we refer to farmers' organizations. We do not infer any political association as we understand could be the case in Sri Lanka.

Whatever extension service does exist has also been fragmented in various government institutions. This has created a multiplicity of assignment and a dilution of effort. The existing extension services need to be organized and amalgamated into a single efficient body.

Fragmentation within the government creates an environment for fragmentation at the grass roots level. A very weak cooperative structure, and therefore sources of raw material, is a disincentive to investment in agro-processing. A lack of agro-processing, the really only viable link in Sri Lanka, to the export market, therefore doesn't exist. The result is that commercial (e.g. cash crop) agriculture is not what it could or should be.

The land itself is not well developed. This may be a factor of land titling. Farmers will not invest in land which they do not have a reasonable chance of keeping. Not having title also creates problems in the system of credit. A land title would be an excellent collateral therefore making it easier to process credit to the farmer. Land titling is an example where a single missing ingredient can cause diverse problems. In this case, the problems are investment and credit.

Small farms, in the absence of farmer cooperatives, has created another theme which pervades the marketing chain. In a phrase, we can label this theme *quality-quantity*. The individual farmers are unable to provide the post harvest handling that specialization would provide. Each farmer must perform all functions necessary to bring his produce to market. Quality suffers. The lack of any cohesive organization has made it virtually impossible to create significant quantity accumulation in one place at one time. This poor *quantity-quality* aspect of the marketing chain results in reduced exports, either directly as fresh or indirectly through agro-processors. We have made a number of recommendations pertaining to the marketing problems, including poor linkages. One of the basic recommendations is to strengthen the cooperative system, perhaps by an expansion of the Export Promotion Village system.

Marketing also involves the marketing of inputs. High yielding varieties of planting material are unavailable. We were repeatedly told that quarantine procedures are a major constraint, especially as pertains to planting material. The system is either very slow or simply prohibits clearing through customs altogether.

*Linkages*, or a lack of them, is another theme. Proper linkages would facilitate the flow of technology and credit. We noted a lack of linkages in many seemingly unrelated segments of the commercial agricultural chain. This starts from the most basic linkage of all, farmer to farmer. This linkage would be created by a viable coop system. The Export Promotion Village seems to be a working solution. We were told that the Thrift & Credit Coops were also working relatively well. Unfortunately, these two organizations only cover a very small percentage of the farmers. Most linkages of farmer to credit do not function well. We were told that credit is available and that many farmers are eligible to receive it. However, only about 20% of eligible farmers receive official

credit. This is due to the inability of the bankers to reach them because of basic logistic problems.

Linkages between the farmer and domestic markets and between the domestic and export markets do not exist to the extent necessary. These linkages would normally be the agro-processor or sophisticated exporter (who could also provide such value added as packing or grading). This brings us to the subject of investment.

*Investment* is an important theme. There needs to be investment in various infrastructures such as silos, transportation, storage prior to export, tertiary irrigation channels, etc. These are investments by the farmer groups, entrepreneurs, and the government. In effect, this kind of investment will strengthen the linkages from the farmer outward. Clear land ownership will also serve to create investment. A titled farmer (or one with a 99 year lease) is more likely to invest in the land than a squatter.

The lack of investment is perhaps more clearly apparent when it comes to a review of the private sector and agribusiness. We have made recommendations which include venture capital, 100% debt financing, free insurance, and results oriented project promotion.

Another theme which has been especially prevalent during our stay here is that of *security*. The civil war which has been going on for a number of years has had its effect on many segments of Sri Lanka (i.e. Tourism) and certainly export oriented agribusiness. Foreign joint venture partners, who often provide technology and he purchase contract for all the production, are going to be hard to attract during these times of civil unrest. We have recommended some financial incentives such as 100% debt financing and OPIC insurance at reduced rates to the investor, but they may still not be sufficient. One of the results of a lack of foreign investment is a lack of technology transfer. We have therefore recommended a bio-technology oriented venture capital company as a possible solution. The venture capital company would seek to motivate local investment in the absence of foreign investment. This same company would also seek to locate appropriate technology and markets for the production. It would, in effect, try to fill the void usually filled by the foreign joint venture partner.

Another form of security which is missing is faith in the government. Key is the issue of nationalization. There is a significant feeling that such an event could happen again and therefore a capital investment incurs this additional risk. However, it is not within the scope of this paper to make recommendation regarding political matters nor are the consultants qualified to do so.

Our marketing specialist has strongly emphasized the *supply-demand* theme. He has recommended that import subsidies and export taxes be gradually phased out, import taxes reduced, and floor prices be eliminated. He, in effect, advocates a market economy and feels that the government is moving in this direction.

## ***Conclusion***

USAID has asked the Team Leader to prioritize those few recommendations which would have the greatest effect on the greatest constraints to commercial agricultural in Sri Lanka. For the sake of emphasis, we have limited this list to only three. A longer list would tend to be a restatement of the above synopsis and would also diffuse the intent of this section.

1. The very first step would be a strengthening of the Farmers' Organizations (Cooperatives). It is the farmers who are the source of raw material and it is this aspect of the commercial chain which must be put into order first. The Cooperative system, when organized and strengthened, would provide the quantity and quality necessary to supply the agro-processors. Processors will not come in until they are assured of a continuous and adequate supply of raw material.

In the absence of large estates under single management, the Cooperative becomes the source of raw material supply and also the receiver of technical and market knowledge. This knowledge will come from the agro-processors and extension service. There is a two way flow into and from the individual farmer. The Cooperative is the venue for this flow and must, therefore, be in place first.

2. Simultaneously with the strengthening and organization of the Cooperative system, it is necessary to activate the private Agro-processing sector. This sector should be considered, by the Cooperatives, to be their market. We do not feel that the farmers, through their organizations, should be directly or overly concerned with the export market. The Agro-processors will, due to the profit motive, assume this responsibility as soon as it is appropriate. They are the best equipped to do so. This is not to say that at some point the Cooperative cannot also be the Agro-processor, which can perhaps be motivated through the creative financing techniques recommended in the text.

3. Research and Extension functions are the next priority as they are the means by which the correct product is ultimately created by farmers for consumption by processors.

We have joined these two functions together here only because the problems of each are similar. Both are fragmented, lack direction and purpose, and are not focused. Regardless of similar problems, Research and Extension should, of course, still be organized as separate entities for the sake of control.

Research, in all its forms (e.g. planting material, quarantine, farming and processing, marketing, post harvest handling, etc.) should be amalgamated, trimmed down, and centralized into efficient units. Duplication of effort need to be eliminated.

A viable, expanded, and focused Extension service should interface with Research so that there is an effective interchange between what is known and what needs to be learned. Extension must be non-political and concerned only with agricultural matters.

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### **III. AGRIBUSINESS**

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**M. E. Evin**

#### **Identify Major Constraints to Expansion of Agricultural Exports and to Development of Value-added Processing of Agricultural Products**

A major constraint to the development of value-added processing and, therefore, agricultural exports is the present situation regarding the civil war. This situation is generally referred to as a "security" problem. Potential domestic investors have indicated that their concern is not so much that a factory would be sabotaged as that the flow of raw material could be interrupted. We can assume that foreign investors would be even more apprehensive. The fact that the present conflict is seemingly limited to the East and North would not offer much solace. They would probably lump the whole country together as an undesirable location for a foreign investment.

There is also some concern of security vis-a-vis the government itself. Some feel that a government which has nationalized once can certainly do it again.

Agricultural investment in growing, post harvest handling, etc. is also affected. Land owners are not interested in developing the land; especially in the contested areas.

Export is hampered by the inability of Sri Lanka to meet the minimum order size often required by importing countries. In addition, unreliability in promised delivery is a problem which tends to dissuade importers from seriously considering Sri Lanka as a supplier. In some similar situations, the insertion of brokers in between the farmers and importers serves to reduce this problem. We did not notice that the brokers were effectively grading into different qualities or adding any delivery reliability to the transaction. There is some amalgamation taking place but the results are still relatively small quantities. A lack of adequate storage to facilitate accumulation is a constraint. The lack of large companies, who usually handle large orders, is a cause of the problem.

The concept of quality control is weak as the focus is generally on self or local consumption and not exports. This is understandable and quite normal in areas where poverty is significant. Collection from the small farmers is not institutionally organized. All linkages are weak. Post harvest handling and storage facilities are poor. There is very little cold store space available.

Businessmen openly stated that there is a lack of the entrepreneurial skills and spirit so critical to the development of agro-processing in the private sector. One businessman openly stated that "Sri Lanka just doesn't have a Chinese population which handles this

kind of thing in other countries of Asia." Those few entrepreneurs who do exist are not interested in the risks or returns typical of agribusiness ventures. Wealthy families tend to be in trading, textiles, etc. Quick profits are very important to local businessmen. Middle level management skills are also lacking.

It would seem that the cost of international travel should be relatively unimportant to a businessman considering development of an export market. Unfortunately, this is not the case. Sri Lanka has maintained an exchange rate very close to what the real rate would be given a completely free float. The rate is certainly not overvalued. One of the down sides to this admirable policy is that imports, including the cost of foreign room and board, are expensive. Let's put things in perspective.

For the sake of argument, we can state that the cost of a good hotel in Colombo is about U.S. \$25/night for a Sri Lankan businessman. A similar hotel in Tokyo is \$150/night or six times the price of the Colombo hotel. Using a multiple of six, the comparison is that this consultant, who is used to paying \$100 in D.C. would have to pay \$600/night in Tokyo. Under these circumstances, this consultant would certainly have to think twice before taking an exploratory trip overseas! Sri Lankan entrepreneurs and companies must certainly be very selective in how developmental or marketing budgets are spent, if at all.

### **Assess Impacts of Government Policies on Agribusiness Development**

No single government entity is responsible for agro-industry. In many other countries, all aspects of agro-industry, such as incentives and regulations, are handled by the Ministry of Commerce and Industry. In Sri Lanka, responsibilities are fragmented in different departments and boards of different ministries. Amongst other things, this serves to create a duplication of effort.

Marketing, training, research, and extension are not well organized as they are also fragmented within different ministries and departments. Information is located in different places. It needs to be pulled together.

One of the reasons why various subjects are fragmented in various ministries may be that there are simply too many ministries. What is in many countries the Ministry of Agriculture is in Sri Lanka the Ministry of Land Irrigation and Mahaweli, the Ministry of Agricultural Development & Research, the Ministry of Fisheries, the Ministry of Plantation Industries, and the Ministry of Food & Coops. In total there are 23 ministries which is actually an improvement over the 45 that existed a year ago. By having so many ministries there is the real possibility of overlapping responsibilities and therefore a loss of management control.

The land tenure issue is being handled by Dr. Thiesenhusen in the Land Use & Tenure section. However, it is certainly a government policy affecting agribusiness and needs to also be mentioned here. Small holdings, in the absence of effective farmer groups such

as cooperatives, does not allow for economies of scale. Allowing for larger holdings can create dislocations with social consequences but that is not relevant to the topic of agribusiness development. From an agribusiness point of view, small holdings in the absence of farmer groups are a constraint to the efficient flow of raw material to the factory.

A related problem pertains to non-titled farmers who work the land under government permits. Naturally, they would have no interest to permanently develop the land without the security of having title to it.

The government's policy towards extension services has had a detrimental effect on the ultimate goal - increasing and diversifying production (at a fair price to the farmer). In the early 1930s, 4000 new agriculture extension agents were put in the field. Subsequently, these agents were amalgamated into the Village Officers (Grama Niladari) program. Now, these extension agents are also involved in social and health services. Although 4000 was not enough and extension was not greatly effective except in the rice program, government policy causing an amalgamation has caused their expertise to be further diluted. There has been a resultant loss of enthusiasm and demoralization.

Government regulations and policies have at times been contradictory and inconsistent. 70% of Sri Lanka's milk requirements are imported while locally produced soya milk can and should be used instead. There is a need to preserve foreign exchange and locally produced soya milk is a perfectly good substitute for imported milk. Perhaps cultural biases could be overcome by introducing, say, chocolate flavored soya milk in the schools. Within one generation, it would probably be a well accepted product. We do not advocate trade restraints but do advocate making soya milk competitive with imported milk.

An example of a policy contradiction was the maize situation in 1987. In that year, the government raised the floor price of maize from Rs. 3 to 4/Kilo. At the same time, maize from Thailand was allowed to come into Sri Lanka causing the real price of maize to fall to Rs. 1/kilo.

At times imports are certainly necessary and yet it may be difficult to obtain a permit. Even after imports are approved, the Customs office requires cash bonds to be posted to assure that import taxes will be paid. These guarantees are not released quickly after the import tax has been paid. This creates additional finance charges to the importer.

Imports are also being made difficult due to a lack of product knowledge or expertise. An example pertains to the importation of pesticides and herbicides. Many feel that the regulations are overly protective and that some products which are not allowed into Sri Lanka are actually not harmful to the ecology.

Regarding exports, there exists a reliance by the Government on only a few of the internationally traded commodity type of crops which could grow well in Sri Lanka. These are tea, rubber, and coconut. We are referring specifically to those crops which are

traded on future markets in more than one location. These are normally crops with depth in buyers and sellers. Reliance on only a few such crops is overly risky as world market prices can move down simultaneously.

Diversity should be considered in these types of crops in addition to the more intense, high value horticultural crops which are not traded on exchanges.

## **Assess Role of Cooperatives and Other Farmer Organizations in Development of Commercial Agriculture**

There are presently about 6000 farmer groups in Sri Lanka. Even with this large number, only a small percent of the farmers are organized into groups. Most of the groups are not working well. Some, such as the PPP (People's Participation Project) and TCCS (Thrift & Credit Coop Society) are working but these are in the minority.

Farmer to farmer linkage is poor. For some reason there is a lack of trust. The farmers do not readily cooperate with each other. Nor is there a viable link between the farmer and the factory. Brokers (traders) make the link but they tend to exploit the farmer, usually through credit. A viable coop system is critical to an export program. Ultimately, without large land plots, it is the coop which is the critical link to the export market since it is the co-op which is the source of large quantities of produce.

About 10-15 years ago, co-ops were working reasonably well. Unfortunately, they somehow evolved into political organizations whose only real function now seems to be to sell consumables to the farmers. This is fine if indeed the other more important functions, such as marketing, are also covered. We visited a co-op in Nurwara Eliya where the usual disease and price information, normally posted on the walls, was conspicuous by its total absence.

## **Recommendations**

### *Organizations*

1. **Venture Capital Company.** It is usually necessary for investors in (agribusiness) projects, especially those which involve significant capital equipment, to obtain loans as a complement to their equity contribution. For the sake of this paper, we can generally say that such a loan would cost about 9% for project financing and 15% for plant expansion, addition, etc. When loans are not available, or the terms not acceptable, investors often turn to venture capital companies for financing.

Regardless of the real situation, which seems to be that the present civil strife is confined to the North and Eastern parts of the island, the foreign reader of the international press is not so selective. Potential foreign investors, which are often the catalyst for domestic joint-venture partners, are not concerned with this kind of detail. They will look at the nation as a whole. It may be necessary to find ways to activate local invest-

ment without the aid of a foreign partner who often provides an attractive package including technology and an off-take contract for the production.

We propose that a non-profit, developmental venture capital (v.c.) company could be especially useful in Sri Lanka at this time. Considering the security situation, it may be impossible to find profit motivated capital to fund the v.c. company. That is why we are recommending a non-profit organization. Of course, the fund managers must be well compensated. Otherwise, professional types will be hard to attract.

A description of such a company would be:

- The v.c. company would take equity in exchange for cash on the same basis as the managing partner. That is to say, unlike most v.c. companies, it would not require an inflated proportion of the equity in exchange for providing financing. The motive for the v.c. company would be to serve as a catalyst to make projects happen. It would not be a profit making organization.
- Unlike most similar companies, the v.c. company would not simply wait for proposals to be brought to its attention. In fact, it would research opportunities that the management felt were interesting and would then seek to attract local investors from two groups: (1) already well established, large local companies such as Upali, John Keels, Ceylon Tobacco Company, Heyleys to name a few and (2) small entrepreneurs who have already developed a track record of success in a particular commodity and now wish to expand or diversify product line. For example, we met a woman in Kandy who was making jam. She needed about Rs. 400,000 to double her capacity. An initial interview showed that she is satisfactorily servicing a bank loan, employs 15 workers - mainly women, would be receptive to taking an equity partner, and had a successful technical career at the Soyabean Food Research Center. Subject to due diligence, she could be an excellent candidate for financing by the v.c. company.
- The v.c. company would specialize in high value horticultural crops in which there is an advanced biotechnology component. Technologies such as tissue culture, artificial insemination, breed improvement, etc. are the type of bio-technology we have in mind. It should be technology which is appropriate for Sri Lanka. Ideally, it would be technology which has been well developed and tested in the developed world, and perhaps other developing countries, but is not yet in Sri Lanka. The potential for this kind of technology transfer would be an important criteria in evaluating project opportunities.
- Other criteria would involve the indirect beneficiaries of the project. For example, the v.c. articles of incorporation could limit its investments to projects that would ultimately involve out growers, are ecologically responsible, employ the poorest of the poor, are export oriented, are labor intensive, etc.

- The v.c. company would also act as a project developer. It would prepare preliminary feasibility studies including financial forecasts and business plan, seek sources of technology, and obtain preliminary purchase contracts.
- The v.c. company would be capitalized by some sort of a refundable grant either from donor organizations or private foundations in the developed world who have a special interest in the transfer of bio-technology. When a project is mature, the v.c. would divest itself of its equity.

**2. Overseas Private Investment Corporation (OPIC) Insurance.** OPIC in Washington, D.C. has a program whereby they provide insurance against inconvertibility, expropriation, civil strife, riot, etc. Through some sort of governmental agency cooperation (between Sri Lanka and OPIC), perhaps the premiums for U.S. investment in Sri Lanka could be partially or totally absorbed by the government of Sri Lanka. Premiums for all coverages are about 3% per annum of the value of the project.

**3. 100% Debt Financing from Development Institutions.** Most lending agreements involve a ratio between debt and equity which is satisfactory to the bank. In project financing, the project with satisfactory down-payment from equity, is the collateral. We propose U.S. financing whereby 100% of the financing is provided by the bank as debt, at concessionary rates, against the personal guarantee of the investor. In the event of failure it is then up to the investor, instead of the bank, to dispose of the assets. The incentive is that the borrower, in exchange for his personal guarantee, can continue to earn, say, 12 - 15% on his own cash in a reasonably secure situation while paying 1-2% on his investment in Sri Lanka. This, coupled with inexpensive or gratis OPIC insurance, may be the necessary inducement to bring in U.S. investment. We understand this kind of financing has already been offered by at least one non-U.S. agency.

### *Cooperatives*

**4. Export Promotion Villages.** These seem to be reasonably effective and should be the basis for an expansion beyond village boundaries. They could be more regional in nature and should be organized by crop and not only by village. This would serve to create consistency of grades. Projects for promotion of farmer organizations should be investigated and perhaps implemented. This could be with the assistance of private consultants or PVOs who specialize in farmer groups. We believe that the government's role in managing the Coops should be minimal. A mechanism so that the Coop can eventually own and manage food processing facilities should be developed. All non-functioning or political Coops should be eliminated or collapsed into the Export Promotion Village. The primary function of the Coop should initially be marketing of products and purchasing of agricultural (not personal) consumables.

**5. Outgrower Schemes.** These should be promoted by providing additional fiscal incentives to agro-processors who provide significant management time, expense, and expertise to schemes such as contract farming. Incentives should be made especially attractive

for those agro-processors that release equity in the factory to farmer groups, perhaps in exchange for raw material. Careful supervision should be maintained to make certain that the farmer group is paid a dividend along with the other shareholders. The farmers' shares could be Class B (non-voting) so as not to interfere with the professional management of the factory.

### *Programs*

**6. Professional Project Promoters (fee paid upon delivery).** Donors should provide financing to professional, private project promoters who would develop foreign/Sri Lankan joint-ventures. Use of OPIC insurance (for U.S. investors), as described above, could be part of the package. These private promoters would have out of pocket expenses monitored and reimbursed. A typical expense would be air fare and lodging for executives of multinational companies to come to Sri Lanka to investigate opportunities. The promoters would not earn any fee until benchmarks are achieved. At that time they would earn a fee and perhaps also some equity upon implementation.

We envision a system whereby the promoter earns his fee at pre-determined benchmarks. For example, a fee would be paid when preliminary letters of commitment have been received from potential equity investors (previously approved by the donor). Another portion of the fee would be paid when the development bank has signed its letter of commitment to make the loan available. The contract could be cancelled if benchmarks are not achieved in a timely manner or within budget. The donor would have the right to unilaterally cancel or extend the contract with the promoter if benchmarks are not achieved.

**7. Savings Accounts.** Interest earned on savings accounts should be stratified so that as the principal increases, the interest rate decreases. This may serve to provide incentives to invest in capital formation instead of savings.

**8. Export Marketing.** There should be a systematic approach to the potential for exports. The first step would be to prepare a "short list" of what high value crops can be easily and successfully grown in the different regions. Markets for these crops should then be analyzed in terms of comparative advantage, freight availabilities, etc. This will hone down the short list even further. The resulting crops should then be promoted by means of the Export Promotion Villages. Foreign marketing and technical advisors, preferably from the importing countries, should be employed by the Villages.

### *Agribusiness Policy*

**9. Land Ownership.** We believe that government policy regarding land ownership should be relaxed to allow for the operation of a land market and therefore, the possibility of larger parcels. There should be strict controls so that land speculation and absentee ownership is prohibited. Guidelines could be developed so that only those who have

demonstrated that they intend to develop the land, are already living on site, are already using previously owned land, etc could qualify to accumulate large plots.

The above generally applies in situations where land is unused. When land is occupied, for social reasons it may be better to create larger entities by utilizing farmer groups as the means of creating larger parcels.

Dealing with fewer farmer entities, either individuals or groups, could serve in the development of agro-industry. Factory managers normally prefer to work with a smaller number of raw material suppliers. Also, economies of scale can better be realized on large plots of land.

**10. Government/private Sector Joint Ventures.** We saw poultry operations in Anuradhapura which were primarily government owned but had some partnership arrangements with the private sector. More activities, presently conducted by the government, should be turned over to the private sector or NGOs.

**11. Planning Policy.** We understand that the Government of Sri Lanka is having a fundamental change in thinking. The present goal is for agriculture to move from a policy of self sufficiency to a policy which also includes commercialization. This means that the government will continue to strive for agricultural self sufficiency. However, the government also wishes to promote the export of cash crops to finance those agricultural and other products which need to be imported.

To support this shift there has to be a fundamental change in planning. We therefore, recommend that the government continue to support its entities which are involved in the process of policy planning.

**12. Commodity Crops.** The Government should give high priority to diversifying into more internationally traded commodity types of crops. One that immediately comes to mind is cocoa.

Cocoa is a crop grown in many developing countries and purchased by many developed countries. There are future markets located in London and New York. Such commodity crops serve to provide a hedge to an agricultural economy. The more breadth of important, internationally traded commodities to a country's diversity, the less likely is it that all will move in the same direction at the same time. Cocoa has certain qualities which make it ideal to the situation in Sri Lanka. Some of them are:

- It is a tree crop which can be profitably grown on small plots.
- There is already a tradition of cocoa growing in the country.
- More than one chocolate factory - and therefore a domestic market - already exists here.

- Japan and Europe are important export markets located in relatively close proximity to Sri Lanka. The quality of Malaysian and Indonesian cocoa is probably inferior to Sri Lankan.

At the present time the market for cocoa is weak (\$1300/MT CIF, NY). A good price range would be \$1800-2200/MT). Two observations need to be made regarding prices.

- Cocoa is cyclical. In fact, new planting should indeed take place when prices are low due to the 3-4 years it takes for the first crop to come in. It is to be hoped that, by planting during a downswing in the cycle, the planter will be marketing his early crops during the following upswing.
- In a multicrop situation, and when cocoa prices are very low, a farmer can simply abandon his cocoa trees (still keeping them clean of disease) and devote his time to other crops, hopefully intercropped with his cocoa, for which the market is high. He can then return to his cocoa trees when cocoa prices have recovered above his cost of production. Intercropping means that valuable land is not wasted while one crop is attended and the other neglected.

We recommend a careful analysis be made by cocoa growing and marketing experts. The Government could then take a serious look at promoting this crop as a means of diversification. Existing trees are very old and yields are extremely low. Cocoa is presently referred to as a Minor Export Crop. However, in fact, it has been totally neglected and no serious replanting is taking place. The industry should be rejuvenated now before it completely dies out.

## **IV. AGRICULTURAL TECHNOLOGY**

**A. M. Lasheen**

### **Assess the Organization and Capacity of the Agricultural Research System (both Government and Private Sector) for Supporting Commercial Agricultural Development Especially to Provide Technology for High Value Horticulture and Export Crops**

Agricultural research in Sri Lanka has been carried out by 26 institutions other than the Faculty of Agriculture and the Post Graduate Institute of Agriculture (PGIA). These research institutes report to nine separate government departments in four separate ministries - Ministry of Agriculture (MOA), Ministry of Plantation Industries (MPI), Ministry of Lands and Irrigation and Mahaweli Development (MLI), and Ministry of Fisheries (MOF). This obvious fragmentation leads to a dilution of scarce resources, both human and physical. It also leads to a lack of an effective mechanism for assigning priorities or coordinating projects for integrated programs for major crops.

Fruit production, more than other crops, requires a well developed, integrated technology system from planting to the market, in order to maximize returns to growers or to compete effectively in the very sophisticated and discriminating international markets. The production of such technology systems will require effective team work among research specialists in several disciplines organized around each major crop. Such systems cannot have major gaps or weak links. For example, it is of little practical value to have well developed techniques in such phases of culture as irrigation, fertilization, pruning, etc. if methods of controlling major diseases or pests are unsolved and sound production technology is of no use without adequate post-harvest handling.

The present organization of agricultural research in Sri Lanka does not lend itself to such an integrated or "systems" approach to the technical problems of specific major crops. Using mango as an example, variety testing is done at Horana, Maha Illuppalama, and Walapita and probably other locations. But no work is being done on mango insect, disease or weed control problems, no studies on irrigation or drainage responses, and no work to evaluate the influence of varieties, rootstocks, cultural practices, soil or climatic factors on fruit quality. No work is being done on the storage requirements and other aspects of shipping quality and packaging of varieties which may be suitable for export. No work is being done on the processing of Sri Lankan mango. No work is being done on the economics and marketing of mangoes. No adequate statistics are available on area planted, production, seasonal supplies or prices. A review of research on other major fruit crops in Sri Lanka would present a similar picture of wide gaps in technology

packages, fragmentation of work, lack of coordination, and the virtual absence of statistical data for use in planning.

Revolutionary strides have been made in tropical countries, Sri Lanka included, in improving yields of basic feed grain crops through the use of a systems approach in the applications of modern agricultural technology. However, because of the longer life cycle of most perennial tropical fruits, progress has been inherently slower ponderous than with annuals. Nevertheless, most of the tools provided by basic research are now available, and ready for application by teams of well trained specialists who concern themselves with the whole spectrum of problems from adaptability, to planting and on to the market for individual crops. One of the most obvious approaches for dramatic improvement has been the introduction of existing varieties and clones from many tropical countries for evaluation, propagation and eventual distribution to growers. To date, very few varieties of a limited number of species have been introduced into Sri Lanka, but no solid accomplishments yet, such as the creation of a whole new industry of one crop (grapes in South India and Thailand, Orchids and flowers in Thailand, cashews in Kenya, etc). While thorough testing is required before the government can recommend new varieties, there should also be encouragement for private firms to attempt their own research and commercial introductions. A DAI report indicates approximately 170,000 metric tons per month of unmet demand for table grapes in Japan and Europe during the peak market opportunities. It is possible to grow varieties of grapes such as Thompson Seedless in the Mahaweli Project and with certain cultural techniques, production could be geared to those market opportunities.

A recent report by CARP indicates that a total of 472 scientists are employed in 19 research institutions. It further indicates that 23% of their time is devoted to full time study and of the remaining 77%, nearly 3/4 is devoted to research; the remainder is for management. The total number of scientists (not including those in seven other institutions) appears adequate, but there is a lack of coordination and cooperation, a dilution of the most important resource, the human resource, due to the large number of research entities. Of 1680 experiments in 1989, 75% involved 1 scientist, 23% involved 2 scientists, and only 5% involved more than 2 scientists.

Among the basic causes for low productivity in research is lack of adequately trained personnel. Another important cause is the high turnover of government employed research workers due primarily to working conditions and pay scales being quite inadequate to meet competition for able employees from the private sector and developed countries. A related disincentive to productivity is the disproportionate weight given to seniority, rather than to demonstrated ability and productivity, in rate of promotion to higher pay levels. Also, too often a research worker posted to a provincial field station feels isolated, deprived of certain amenities and worried about the quality of the educational and health facilities available for his children. Thus many potentially productive provincial field station researchers do not stay long enough to accomplish much.

Lack of adequate training to do the job expected of a person usually leads to frustration. This and the above disincentives to productivity lead to uninspired, pedestrian efforts of a research staff, which are characteristic of poor morale.

Among support factors contributing to poor productivity are uneven year-to-year support of long range research programs (fruit varieties introduced by FAO) and inadequate farm and laboratory equipment and supplies. In the case of fruit crops, poorly drained soils and inadequate water resources and irrigation distribution facilities are basic handicaps to research programs at some research stations. Also, in most stations there is a lack of reference books and journals.

Human and organizational factors, however, far outweigh poor facilities and equipment as disincentives to productivity of the research staff. Efforts to improve productivity will have to give first priority to upgrading personnel training and to improving the incentives for careers in government research.

### **Assess Organizational Arrangements and Regulations Governing Importation and Dissemination of Plant and Animal Germplasm**

Organizational arrangements and regulations covering the importation of plant material from abroad have been presented by Larry Tengan, quarantine consultant. This consultant only wishes to say that the importation has been hampered by regulations made rigid and especially by their interpretation. This, in my opinion, logically leads to frustrating the importer and restricting growth possibilities, and worse, to frustrated individuals ignoring regulations.

As indicated earlier, clones and varieties can dramatically improve production for both local and export markets. New varieties that have already been developed and evaluated elsewhere could be imported to Sri Lanka at low cost. These clones and varieties, particularly of fruit crops can improve quality, yield, and lengthen harvest season. This in turn would reduce prices locally, and if manipulated intelligently, would take advantage of higher prices during the profitable seasonal windows in European and Japanese markets.

A trickle of varietal introduction has been started, but this activity must be accelerated by the government and the private sector. In 1985 the FAO introduced several varieties of avocado, citrus, mango, and some other fruit species, but maintenance of this valuable material at some of the regional centers has not been adequate. Also, a nursery industry, capable of propagation and sale of new varieties to growers, hardly exists in Sri Lanka. None of the commercial nurseries visited has either propagation or shade facilities, nor suitable planting containers such as black polyethylene bags which could be easily produced locally. Even acceptable planting media are lacking. As a result of these practices nursery losses may be as high as 70% to 80%. For sometime a Dutch company has been exporting coconut fibre "dust" from Sri Lanka. In the process of using the coconut fibre from the husk to make ropes and loosely woven shipping bags,

small fibre strands make that fibre "dust". This material is an excellent growing medium and may be better than peat or sphagnum moss, both used worldwide. Sri Lanka is the leading exporter of this material with about 93% of the world production.

The mechanics of importing live plant material, however, often end up being an exercise in futility. Nevertheless, it can be done and controlled by sound organization, coordination, and timing; this will be explained in the section dealing with recommendations.

### **Assess Private Sector Linkages for Access to Agricultural Technology from Abroad**

The present pattern of land tenure in Sri Lanka does not favor tree cropping by small land owners. The small fruit grower with 1/2 to 2 ha of fruit trees cannot do much in the way of using sophisticated techniques or expensive equipment. Nor can he afford costly investments for wells, pumps or irrigation pipe lines. Many of these small land owners, however, are excellent farmers in growing annual crops such as rice. If motivated by profits, they can also be excellent farmers in growing other annual crops like cassava (for feed), peppers, onions, etc; a good example of this exists in Nuwara Eliya.

The existing land tenure pattern thus tends to divide fruit growers into two categories of ability to use modern technology; the small farmer described above, and the medium to large fruit growers with 4 to 40 ha. This group can use sophisticated techniques and almost any type of needed equipment, on a cooperative basis. They should have little difficulty in financing needed farm improvements, such as adequate reservoirs and water distribution systems, if proper farm credit and effective grower cooperatives are established. Also, the leaders among them would be quick to adopt improved varieties or practices.

In Sri Lanka there are only a few fruit growing enterprises with more than 40 ha. These are owned by large growers or corporations. How significant these will be in the future development of fruit culture will depend, among other factors, on the difficulty of acquiring large tracts of good fruit land by private enterprises. This situation is quite pertinent to all of the Mahaweli sections. This consultant understands that there do not appear to be serious restraints to the long term leasing of fairly large tracts of good upland soils in Mahaweli and possibly other areas. Such estate-type fruit growing enterprises would also have no restraints to quickly putting into practice even very complex technological advances.

In light of the above, fruit research and extension should be aimed at two principal types of clients: the small grower with limited ability and resources to make use of improved technology involving substantial capital investments or sophisticated techniques, and the medium and large growers who can.

In the absence of effective research and extension as well as incentives, there has been little effective linkage between farmers and exporters/investors who can effectively provide technology from abroad, in a very short time.

Another constraint is the complete absence of multinational fruit and vegetable processing and marketing organizations who can supply the vital factors of technical know-how and an established world-wide marketing organization. At this time of uncertainty they would not be eager to risk their capital. On the other hand, some experienced businessmen who are familiar with Sri Lanka believe this is an opportune time to invest.

Despite this gloomy assessment some enterprises in the private sector do exist and are thriving: gherkins, cut-flowers, foliage plants, strawberries, export of fresh fruits and vegetables to the Mid East and the Maldives, Keels Foods Products Ltd, Ceylon Tobacco Company and Dutch Plantin B. V. (coconut "dust").

### **Assess Current Extension Systems and Programs and their Adequacy to Support Commercial Agricultural Development for Small Farmers, Commercial Firms and Medium-size Farmers**

At present, the extension system is virtually ineffective. Even before the recent assigning of extension agents to other village responsibilities, the extension service was fragmented between various government institutions. At least four ministries are involved in extension: Ministry of Agricultural Development & Research, Ministry of Lands, Irrigation, and Mahaweli Development, Ministry of Plantation Industries, and the Ministry responsible for Provincial Councils. In some ministries there are more than one extension service in different departments within these ministries. This fragmentation and the multiplicity of assignment undoubtedly lead to dilution of effort and duplication. Again, due to fragmentation in the system there is a lack of linkages and communication between the various extension groups and ministries. Another contributing factor is the lack of operating funds and the ensuing under utilization of extension personnel.

For the government of Sri Lanka to achieve its stated goals of diversification and commercialization in agriculture, the present generalized training of extension agents will not be adequate. This is particularly true in regard to fruit and vegetable production where specialization in subject matter must be the method of training. The present generalist extension agents cannot be effective, due to lack of in-service training in commodity oriented technical knowledge and extension methods. Also, some programs fail for lack of inputs such as fertilizers, seed and equipment, and in some cases farmers have difficulty in obtaining credit for inputs recommended by agents.

As explained earlier there is also fragmentation in research, which, when coupled with the fragmentation in extension, would explain the present lack of liaison between extension, research and teaching, the three pillars of modern agriculture.

Other contributing factors include: (1) limited applied research results suitable for extending to farmers; research needed at such elementary level is either too little, or too academic; (2) lack of extension equipment and means of transportation to villages in remote areas, and (3) lack of suitable printed materials and other means of communication; radio, television, and schools.

Private sector extension, on the other hand, appears to be more efficient, but it is limited to few existing enterprises: gherkins, strawberries, tobacco, sugar and some other crops.

### **Assess Adequacy of Current Technical Agricultural Education to Support Commercialized Agriculture**

A report to USAID by DAI estimates the numbers of graduates in agricultural education and their degrees for 1990 to 1995 as follows:

<u>BS</u>	<u>MS</u>	<u>MPh</u>	<u>PhD</u>	<u>Post Graduate Diploma</u>
1800	173	236	67	645

These overall figures appear to be adequate for the needs of Sri Lankan agriculture. Most of these graduates receive their academic training at the Faculty of Agriculture and the Post Graduate Institute of Agriculture, at the University of Peradeniya, Kandy. A well trained faculty, many in some of the best universities in the U.S. and the U.K., teach undergraduate courses at the Faculty of Agriculture and graduate courses at the PGIA. Some researchers at the DOA also teach at the PGIA. Other than teaching, many members of the faculty conduct research in various fields of plant and animal sciences, with some of their publications appearing in journals in the U.S. and Europe.

The training of undergraduate students appear to be adequate from an academic stand point, but more practical training is needed, particularly in horticulture. Heavy reliance is placed on theoretical classroom instruction which usually produces white-collar graduates neither willing, nor with enough practical training, to become involved in production. Presently, there is no specialization at the undergraduate level.

There is also a lack of laboratory and field facilities necessary for instruction in extension. Such facilities would offer distinct advantages for developing an educational program at the Faculty of Agriculture for extension workers.

Both the Faculty of Agriculture and the PGIA need more funding for their operations as well as scientific equipment and chemicals. There is also a need for a repair service for scientific equipment and electronics.

## **Recommendation to Found the National Agricultural Research Center**

The consultant's major recommendation is the founding of a National Agricultural Research Center (NARC). NARC could address most of the major constraints in agricultural research, extension and education and create viable linkages to technology, both in the public and private sectors.

The consultant is convinced that Sri Lanka possesses existing and potential resources to justify a national initiative designed to diversify its agricultural industries and develop a major addition to of its export economy. Resources, both human and physical, must be focused on problem-solving priorities in a holistic manner. As exemplified by such nations as Japan, S. Korea and Taiwan, development of human resources can, in time, overcome deficiencies in natural resources.

This recommendation is not meant to create another research institution to add to the 26 already in existence. On the contrary, it is meant to bring together many of those institutions and their resources into one viable research organization capable of dealing efficiently and realistically with problems in Sri Lankan agriculture. However, if this is not feasible now or in the future due to political or other considerations, a strong argument may be presented for the creation of a National Horticulture Research Center (NHRC) instead. The following discussion and proposals, therefore, are focused more on horticulture, not only because the consultant is a horticulturist, but also because almost all of the crops being considered for the government's emphasis on diversification and commercialization are horticultural crops.

The potentials and opportunities, if realized, could transform Sri Lanka into an exporter of fruits, vegetables, flowers and other crops to foreign markets. In consideration of the above, the consultant believes that the way to address the present restraints is through the establishment of such a center to coordinate research, training and extension. Its mission would be to produce the needed technology and training necessary for optimum production through interdisciplinary and developmental oriented research, training and extension. Many aspects of agricultural development in Sri Lanka strongly justify the establishment of the center; some of them are:

- Export potential and the need for hard currency. Recent trends in consumer's preferences for more fruits and vegetables in their diet open the door for countries like Sri Lanka to have a share of that market. There is also a trend, particularly in affluent societies, for the "natural taste" of fruits and vegetables.

Sri Lanka must keep up with and adapt to these trends by developing its horticultural industry, not only for the export market, but also for the local market. According to a recent article in the *California Grower*, "Fruits unheard of in the United States 10 years ago are now the little darlings of the produce industry, and more new ones seem to find their way into our vocabulary (and onto store shelves) daily. In the mid-1970s the average supermarket stocked 65 items in its produce

section, today that figure has jumped to 200, with subtropical and tropical fruits accounting for a healthy chunk of the increase." What has happened in California only ten years ago has already happened in most of the United States and the trend is moving to Europe and Japan;

- New land developed for agriculture and upland soil in many locations may be used more efficiently for horticultural production;
- An expanded horticulture industry can provide employment for skilled and semi-skilled labor;
- The proposed center and its corps of highly trained specialists would be capable of utilizing already existing information for problem solving and production;
- In cooperation with the Plant Germplasm Resources Center (PGRC) the center would serve as the source of germplasm, propagation material and hybrids for Sri Lanka;
- Training of technicians, junior scientists, and extension specialists in production techniques;
- The proposed center would complement existing faculties of agriculture, the Post Graduate Institute of Agriculture and other institutions through shared research specialists and technology transfer services through joint appointments and graduate student research. Thesis studies would be within the programs and priorities of the center.

It is proposed that the center be located in Kandy to be adjacent to and share facilities and some services with the Faculty of Agriculture and the Post Graduate Institute of Agriculture, regardless of whether or not it is NARC or NHRC. If the idea of NARC is feasible, then that center would incorporate: Tea Research Institute (TRI), Rubber Research Institute (RRI), Coconut Research Institute (CRI), Forestry Research Department (FRD), Sugar Research Institute (SRI), Department of Agriculture (DOA), and Department of Export Agriculture (DEA). It would thus become the research arm of the Ministry of Agriculture dealing with all plant sciences. The National Aquatic Resources Agency (NARA), Department of Animal Production and Health (DAPH), and Veterinary Research Institute (VRI) would be in one department in the ministry. However, if the idea of NHRC is more acceptable, then the center would incorporate: Division of Horticulture, Department of Export Crops with its Matale Research Station, and the Plant Germplasm Resources Center.

It is also proposed that the center should have a semi-autonomous administration with the ability to function, when necessary, along commercial lines in the purchasing of inputs and sales of products and services. It should have a technical advisory committee of governmental and semi-governmental organizations and should include some grower or-

ganizations and private enterprises. Its personnel should be from existing institutions some of whom would have joint appointments. Its staff would include a director, deputy director(s), senior staff, field station superintendents, junior staff and technical staff. The center should be organized to include four major divisions:

Economics and Marketing;

Production and Research;

Processing and Post-harvest;

Information and Training.

Other than its administration services, it should have a statistical laboratory, a library, field stations (at existing centers), and facilities for personnel upgrading. To have a viable linkage to the private sector it should have a liaison office to attract private enterprises and venture capital companies, both domestic and foreign, to invest in agribusiness projects. They would cooperate with the center and purchase its products (tested varieties, virus free material generated by tissue culture, etc) and services (training, technology, etc).

The following priorities in the center's development should be observed:

- Staff training (PhD, MS and OJT), based on existing and specific needs, should take place in Sri Lanka. Training overseas for PhD and MS should be completed with thesis research in Sri Lanka;
- Division development starting with production and research and followed by processing and post-harvest, information and training, and finally economics and marketing;
- Activation of the field stations.

It is important that the center maintain professional cooperation with pertinent international institutions. For the center to become viable within fewer years and have a corp of well trained specialists, it is suggested that the Ministry of Agriculture negotiate a training and commodity support project with the USAID and a consortium of leading American universities and institutions and other donors. Sri Lankan, and not American degrees would be granted. This is designed to reduce the possibility of brain drain to developed countries and to guarantee that thesis research would be tailored to the needs of Sri Lankan agricultural problems.

It is interesting to note that another USAID team of consultants (High Income Commercial Agricultural Technology Project - Horticulture) also made a similar recommendation regarding consolidating horticulture research. They recommended the

establishment of a National Horticultural Development Corporation (NHDC) to develop a horticultural industry.

Whether it may be NARC, NHRC, or NHDC, the time to reorganize Sri Lankan agricultural research in general and horticultural research in particular is NOW.

Since plantation crops and industries, lands and irrigation, and fisheries have been traditionally within the realm of agriculture, it is recommended that these activities be integrated within a Ministry of Agriculture. Possible reorganization of that ministry may follow the well established worldwide system of corporate administration comprising a chairman (cabinet minister) assisted by a number of permanent civil service deputies, each responsible for a well defined major activity in the ministry. This consultant believes that the present system may be responsible for the dilution of the limited resources, both human and physical, now available for the 26 research organizations and the several extension services. It may also be responsible for the cumbersome administrative procedures and regulations and their effect on management efficiency.

In suggesting this reorganization, the consultant is aware of the inherent difficulties and ramifications of such a reorganization and realize that this suggestion may be unimplementable at this time.

### **Other Recommendations**

1. To satisfy the government's emphasis on commercialization and diversification of agriculture, the present system(s) of extension must be reformed. The following recommendations are suggested:
  - Extension contribution to farmers should be in the form of promotion of single commodities which in the long run may require less, but better trained, extension personnel.
  - This approach will require real cooperation with research, also oriented around single commodities, both at the proposed center or the universities. This cooperation must be formalized and direct.
  - A viable extension must collaborate with extension activities in the private sector and farm organizations.
  - There is no rationale to justify having an extension system fragmented between four different ministries in a small country like Sri Lanka. As recommended above for research, consolidation is recommended for extension. A national extension service should be in the Ministry of Agriculture.
2. Variety introduction to improve quality and yield should be done, as early as possible, by a horticulturist or a plant breeder from the Department of Agriculture, who should

be familiar with quarantine regulations and varietal differences, in cooperation with the quarantine division. He may be replaced later by a horticulturist, or a plant breeder from the proposed center staff. The horticulturist(s) or plant breeder(s) would be in charge of this activity both for government organizations and individuals and organizations in the private sector, and would be housed in the MOA or the proposed NARC or NHRC. The proposed facility may be called "Plant Introduction and Importation Service". Any individual or organization wishing to import plant material from abroad must go through that service. The decision regarding release or quarantine (for testing and possible release) should rest with that service and scientists in the quarantine division (see recommendation 3 below).

Crops which should receive high priority for research and development leading to export are: grapes, cashew nuts, pineapple, mangoes, bananas, papayas, persian lime and others. Some of the evaluated varieties introduced by the FAO should be distributed to nurseries and interested growers.

The GSL should train a plant pathologist, a nematologist and a virologist to work in the quarantine division of the MOA.

3. At present, with a world production of more than 300 million tons a year, potato ranks behind rice, wheat and maize. However, by the year 2000, it is expected to rank much higher, particularly in developing countries. The use of non-selected potato seeds leads to reduced crops; the following is suggested:

Increase local production of certified seed by the leaf-bud cutting technique to eliminate the need for importation of "Elite" tubers from Europe. This technique has been very successful in Vietnam. It may also be complemented by the use of tissue culture to secure healthy stocks for pre basic seed tuber production.

4. Large acreage of highly productive soils in Nuwara Eliya now used for carrot production may be used intensively with appropriate technology for high value export crops. This would be a quick way to invigorate technology linkages in the private sector.

In the same region, seeds of many species of vegetables and flowers may be successfully produced in the Nuwara Eliya region, at least for local use. This may become an incentive to start a seed industry which currently is nascent in Sri Lanka.

5. Present plans for the development of irrigation for upland soils should be carried forward. More attention should be paid to the special problems and requirements involved in irrigation, especially of fruit trees on upland soils.

The GSL should encourage private enterprises to invest in planting fruit trees in these soils for fruit export. Interviews with some medium sized fruit growers convinced the consultant that many of them are able and energetic growers who are willing, even eager, to adopt improved cultural methods if the value of their crops can be

demonstrated to be satisfactory. These able growers are a major basic resource of great value in achieving the goal of developing a modernized, competitive fruit industry in Sri Lanka. Such growers should be sought and assisted by researchers and extension agents involved in horticulture research and extension.

Cassava could be grown on marginal land in Mahaweli to be used in animal and chicken feed. Cassava is easy to grow by small farmers.

The GSL should review laws dealing with the establishment and operation of a multinational fruit processing and/or marketing corporations with a view to indicating changes which would provide greater incentives and security for such new enterprises in Sri Lanka during the developmental or pioneering stage. Presently, there is a complete absence of large fruit estates in Sri Lanka. This situation usually leads to chaotic marketing problems. New lands would be ideal for this development.

6. The Faculty of Agriculture should consider specialization in undergraduate training, possibly during the third and fourth years and could consider adding a fifth year for more specialization.

Both the Faculty of Agriculture, the PGIA, and other research institutions suffer from the lack of maintenance of scientific equipment and their repair. In consideration of this immediate requirement, the following is recommended.

One or more qualified vocational school graduates may be sent to the US to receive OJT in one of the companies specializing in the sale and service of scientific equipment. Eventually one or more trainees may work at the proposed center.

More hard currency funding should be provided for more acquisitions of reference books and subscriptions to scientific journals for libraries at the Faculty of Agriculture, the PGIA and other research institutions.

7. To date agricultural research production has been modest in relation to time and human resources invested in it. The disproportionate importance given to seniority plays an important role leading to frustration and a tendency to low productivity per scientist. To improve research in Sri Lanka, priorities need to be given to personnel training and upgrading and to creating a reward system of incentives for career research workers. The most important element in any scientific community is the human element; without enthusiasm and dedication, very little contribution can be expected. Also, encourage team work both in the ministry(s) and universities to develop the needed integrated technology systems for priority crops both in the ministry(s) and universities.

## **V. AGRICULTURAL MARKETING AND CREDIT**

**Cesar A. Amorin**

### **Assessment of the Adequacy of Current Market Information Systems and Marketing Research and Development Programs in the Public and Private Sectors**

#### *Market Information Systems*

Farmers are able to negotiate for the sale of their produce. They are informed about current prices. However, in practice, buyers pay less to the producers because of arbitrary cuts in weight of produce. Farmers are charged for the transport cost, and payments are made to them in installments. In the end, farmers accept these conditions of payment because they are usually short of cash and have known their buyers for a long time. Loyalty has been built up through mutual favors. Buyers in the past have lent money to farmers, or have given them medicines or other assistance.

Price information provided by ARTI and Mahaweli bulletins is based on past weeks. It is "post mortem information" that helps only the negotiations between producers and buyers during harvest time. Price information in this form is inadequate for farm management, production and export planning.

Price information by grades is available for rice, chillies, gherkins, pineapples and coconuts. The majority of the crop prices are not reported by grades. Quality is not rewarded with good prices.

We heard several complaints from wholesalers and exporters that they cannot get the quantity and quality of produce to satisfy the specifications of their letters of credit. Processors complain they cannot get the required raw materials.

Producers also are not rewarded for quality and never have purchase orders with time to plan their production. Legislation or regulations to encourage both producers and buyers to honor contracts is necessary to facilitate commercial transactions. Credit can play an important role in solving cash flow problems in these transactions.

#### *Marketing Research and Development Programs in the Public and Private Sectors*

Information on post-harvest technology is not well developed. The Mahaweli and ARTI bulletins are not distributed country wide. Post-harvest handling in general is deficient in Sri Lanka. There is no reward for quality, and producers harvest early to get bet-

ter seasonal prices. Early harvest affects the quality and shelf life of the produce. Farmers and middlemen neither grade, wash clean, nor pack produce. Produce is transported in bags or in bulk with passengers seating on top. The bulk of the consumers are low-income people unable to pay for quality.

There is no harvest and post-harvest technology research in Sri Lanka. The National Research Council has not considered as a priority post-harvest technology, food processing, and marketing.

Apart from potatoes and onions, it is very likely that in the medium and long term, the production of most of the crops in Sri Lanka will have to find outlets in the export market. Sri Lanka's "largest potential market lies in the Asian Region" because of its location and the regional consumption pattern, according to the Agricultural Diversification Study of June, 1987. The study found that in Asia, Sri Lanka is within competitive range to produce ginger and blackgram and, to a lesser degree, groundnuts. However, in order for Sri Lanka to become competitive in Asia, there must be improved productivity and quality of most agricultural commodities and reduction of transport costs.

Both infrastructure at the purchase centers for post-harvest handling and processing at the rural areas are deficient. Marketing infrastructure improvements needed are provision of water for drinking and for produce cleaning, and provision of weighing machines for bulking and packing.

The marketing channel is composed of primary and intermediary buyers and wholesalers:

(a) *Primary buyers* are defined as traders who buy directly from producers. They are generally one of six types: Local collectors, local traders, outside collectors, cooperative institutions, divisional wholesalers, and regional wholesalers. It is thus unlikely that farmers are left without a choice of buyer for their produce.

(b) *Intermediate buyers* purchase from primary buyers and from producers for bulking of supplies. They maintain a strong posture in the marketing channel because generally they own the transport, have greater access to capital, maintain closer contact with wholesalers and are better informed on prices than farmers and primary buyers.

(c) *Wholesalers* are identified in three categories:

- Regional wholesalers, who function primarily as intermediaries and less often as primary buyers

- Outside wholesalers located in consumption areas outside Colombo who obtain supplies direct from production areas and debulk for retail in their own areas

- Colombo wholesalers, who constitute the effective end of the marketing channel and either supply in bulk to the export trade or debulk their stocks for industrial users and retailers.

The Colombo wholesalers have access to world market buyers and price information. They have a system of regular contacts with their suppliers informing them about current prices. Suppliers in turn contact wholesalers by telephone before bringing their supplies to Colombo.

Wholesalers from the Pettah Market in Colombo and the Municipal Market in Kandy are a limited group interested in maintaining the present system to avoid competition. These wholesalers and retailers have not invested in adequate infrastructure for handling unloading, storing, loading, grading, packing and distributing the produce.

Transportation is expensive. Trucks, maintenance, and fuel are costly. Trucks usually go to the field and collect the produce for a broker. Transport charges are around 14 percent of the value of the produce. The broker discounts the transport costs from the value of the produce negotiated with the farmer to pay the transporter. Transporters usually are organized. Transport in Mahaweli is even more scarce and expensive because of security problems.

Railroad service is deficient. Production from Mahaweli is not transported by railroad basically because this service is very unreliable; a regular railroad schedule clearly is needed. Commercial agriculture air cargo is limited because the available volume is small. In addition, the cargo rates charged for agricultural commodities are between US\$1.13/kg to US\$1.40/kg compared to garments US\$2.00/kg. Airlines give priority to garments.

Colombo seaport has been modernized with Japanese aid. Infrastructure is suitable for port services. However, service is expensive and deficient due to poor management and untrained personnel.

The Pettah Market of Colombo and the Municipal Market of Kandy are obsolete and inefficient. Construction of marketing infrastructures is past due.

### **Assessment of the Organization and Functioning of Current Agricultural Product Markets**

Rice marketing is functioning well with many sellers and buyers, easy entry, and absence of government-imposed price distortions. Rice mills are in place. Production technology is good. Post-harvest technology is satisfactory for local consumption. Rice is the country's basic staple, and after consistent yield and area growth, Sri Lanka is reaching self sufficiency. We applaud this accomplishment. However, if Sri Lanka wants to enter the international rice market, it will have to upgrade quality at the production and milling levels.

Vegetable and fruit markets function with disadvantages for the producers because farmers are usually short of cash and unorganized. Post-harvest handling of fruits and vegetables is deficient. Vegetables and fruits are not harvested at the right time for quality, and they are transported in bags or in bulk. Market Bulletin information on

post-harvest technology by Mahaweli and ARTI is not working well. The information reaches only parts of the country, the techniques are not demonstrated visually, packing materials are expensive, and prices do not reward quality.

Maize and soya beans are produced in the dry areas, but supply is small. High yielding varieties of corn hybrids need to be imported and produced in the country. Excellent markets exist for feeds and vegetable oils. Prima Enterprise process maize and soya beans for feeds and vegetable oil.

The poultry industry has problems, as feeds are very expensive. The feed industry imports most of the corn and soya beans. The small poultry enterprises market their eggs and birds in local communities and cannot compete with the large poultry enterprises operating in the North and South of Colombo. However, poultry products have a good demand in the country. It is an excellent source of protein and provider of employment.

The dairy industry is supplying only 25 percent of the total demand of milk. Feed is the main constraint. To increase dairy productivity, it is necessary to upgrade animal breeding and to determine the economic use of feeds. Quality feeds should be produced more efficiently to reduce local prices. Dairy is produced mainly in the dry areas, parts of Nuwara Eliya, and in some of the coconut farms. Around 40 percent of the smallholders own cattle. Production of milk is mainly for household consumption. The Ministry of Agriculture has been trying to organize farmers for technical assistance to improve milk yields. Processors are subsidizing milk collection but are importing 75 percent of the milk and dairy products.

Beef production is of low quality and mainly for local consumption. Slaughter facilities are deficient and sanitary standards in need of upgrading. Water buffaloes are mainly for draft work.

Chillies and onions are financially viable propositions. They are produced in the dry areas and marketed under the same system as vegetables. Green grams and gingely are both financially profitable and highly suitable for almost all rainfed areas of Sri Lanka.

Minor export crops such as pepper, cinnamon, coffee and cocoa are produced basically in the central part of the country. They are intercropped with coconuts or tea in the case of small farms. Minor crop exports, except for pepper and some coffee, have had little success. Cocoa has good potential (see agribusiness section).

Potatoes produced mainly in Nuwara Eliya have a good internal market. Unfortunately production and quality is presently damaged seriously by nematodes. Cost of potato production is high (around Rs. 60,000). Potatoes used to give high returns but are now a losing enterprise. Bank loans for potatoes are now in high default.

## **Assessment of Current Agricultural Pricing Policies**

Government export taxes on tea, rubber and coconuts reduce prices for these commodities at the farm level. As a result investments to upgrade productivity and quality for these crops have been minimal. Sri Lankan yields for these commodities are much lower than those in competing countries in the region. These major export crops have been treated only as a source of government revenue, foreign exchange earnings and employment. Investments in rehabilitation have been minimum. As a result total production of these crops has declined and Sri Lanka's share of the world market has fallen 30 to 40 percent in recent years.

The two state-owned plantations (Janatha Estate Development Board and the Sri Lanka State Plantations Corporation) are causing tremendous losses to the treasury. World experience indicates that government-owned enterprises always lose money.

There is a Cost of Living Committee trying to influence prices at the consumer level, but this appears not to have been very effective. There also is an Agricultural and Food Policy Committee that in the past had some influence in price policy. Fortunately, in practice there are no price controls or distortions other than import restrictions and import policies.

Government credit policy is to subsidize interest rates for small farmers. However, 80 percent of farmers are not reached by the formal institutional credit agencies. If farmers want to borrow from informal sources, interest rates are extremely high. As a result, the application of technical inputs is minimal. Long-term investments for rehabilitation of crop plantations, soil protection and infrastructure are negligible.

## **Assessment of the Adequacy of Agricultural Input Supply Systems**

The main input constraint for the development of commercial agriculture in Sri Lanka is the availability of high yielding varieties of seeds and planting materials. Incentives and technical assistance are needed for the private sector to increase the production of high-yield varieties of seeds and planting materials. Control and quarantine procedures also need to be expedited.

Fertilizers, pesticides and veterinary products are available through several dealers in the rural areas. However, inputs are not applied at their economic levels. More than 75 percent of farmers do not use technical inputs because they do not know the economic benefits of inputs or they are unable to purchase them. Technical assistance and credit are limited.

Fertilizers were subsidized heavily in the past. The GSL has been phasing out fertilizer subsidies since 1989. The GSL is pursuing the correct policy, as the best path seems to be elimination of fertilizer subsidies altogether. Total fertilizer used in 1989 amounted to 505,878 metric tons, showing a decrease of 4 per cent over the previous

year. Paddy used around 45 per cent of the fertilizer consumed in 1989; tea 25 per cent; coconuts 7 per cent; minor food crops 7 per cent; rubber 4 per cent; minor export crops 1 per cent; and other crops 11 per cent.

Proper packing materials are unavailable or expensive. Packing particularly need improvement for onions, potatoes, chillies, pineapples and avocados. The use of crates instead of bags would not only reduce wastage, but also improve the quality of these products, resulting in better prices. To encourage this practice, quality has to be rewarded with much higher prices because crates and their transport cost more than bags and their transport. The trend of replacing jute bags with polythene sacks prevents the breathing of the packed product and adversely effects on commodities like greengram and blackgram. Technical and economic analysis are needed to assess the use of crates and jute bags.

### **Assessment of the Adequacy of Agricultural Credit Systems**

Institutional credit accounts for just over 20 per cent of the agricultural credit in Sri Lanka. The balance is supplied by non-institutional money lenders that provide only short-term loans at higher interest rates.

Institutional banking has provided very few long-term loans for investments in agriculture. Many agricultural development schemes have been formulated by the GSL to increase the number of farmers receiving loans. Although liberal refinance facilities with respect to long-term lending under these schemes are available from the Central Bank of Sri Lanka, the lending under such schemes has been minimal. In fact, financial accommodations from commercial banks to farmers is confined to a routine provision of cultivation loans out of refinance facilities provided by the Central Bank.

Commercial banks have yet to show interest in long-term loans for investment in the agricultural sector. What little has been done in this sphere has been confined only to a few activities such as floriculture, ornamentals, fisheries, coconut cultivation and animal husbandry. However, there are a number of other important commercial agriculture developmental activities that require institutional credit. These include lining of field channels and lying of pipelines instead of traditional field channels, where necessary; lining of dug wells in areas with loose soil structure to prevent their collapse; widening of wells and repairs to wells necessitated by normal wear and tear; contour bunding as part of soil conservation; repairs to small irrigation tanks; and construction of small silos to store agricultural produce. Bullock carts are required by the small farmer to carry his produce to the markets and bring back inputs and various necessities of life.

Diversification of bank loan portfolios to farmers is more important than creating schemes. Loan schemes, in practice, have been blocking important required long-term financing. When farmers go to the banks to borrow for wells, farm storage facilities, bullock carts or soil conservation, they are told that these types of financing are not under their loan schemes.

Commercial banks do not lend to small farmers unless refinance is available from the Central Bank. It is suggested that some minimum norms be stipulated in this behalf from the Central Bank of Sri Lanka, as is done in India and other countries, where the private banks may be required to ensure that at least a specified percentage of their agricultural lending flows to the small farmer sector. The private banks will have to ensure that their staff handling agricultural credit are adequately oriented toward small farmer finance. The government should provide adequate agriculture extension service to collaborate with the banks in making and supervising these loans.

The Sri Lanka banking community has many problems with institutional operation and efficiency regarding agriculture. The criteria for loan appraisal, approval, disbursement and recovery is deficient. Government banks are overstaffed. Banks have transport problems to appraise and supervise loans.

The Federation of Thrift & Credit Cooperative Societies Ltd could channel loans to producers, intermediaries, transporters and local processors. In 1988 the FTCCS had 5,885 societies with 568,320 members. Presently, the FTCCS has problems with its housing loan recovery because of political promises made for this type of loan. In 1988 recovery for the house portfolio was 91 per cent; in 1989 it dropped to 60 per cent; and in 1990 it is dropping to 30 per cent.

The channeling of production, processing and marketing loans through FTCCS should be considered. Lessons learned from the housing experience should be applied to avoid problems with the agricultural loans.

Institutional credit interest rates for small farmers do not reflect inflation and cost of administration. As a result agricultural credit programs deplete their funds continuously. On the other hand, non-institutional loans charge excessive interest rates for inflation, and recovery is much higher.

## **Recommendations**

### ***Marketing***

1. ARTI and Mahaweli bulletins should broadcast marketing information with an "outlook" for coming seasons. Forecasting of prices and shortages and surpluses of agricultural commodities by region is needed. Field personnel can make these forecasts assessing the crops being planted, weather forecast for the year, and crop conditions. Forecast of agricultural commodity prices, shortages and surplus will permit: (1) producers to perform better farm planning, (2) intermediaries and transporters to be in the right places at the right times, (3) processing enterprises to procure, process and market more effectively, and (4) exporters to more effectively fulfill their international orders.

2. Post-harvest technology research should be prioritized in the National Research Council Program. Emphasis should be placed in (1) farm storage facilities utilizing local materials, (2) reduction of packing costs using local materials, and (3) optimal time of harvesting. Effective coordination to promote and demonstrate the positive results of these technologies with the private sector and extension services should be in place.
3. Technical assistance and information on post-harvest handling should be provided through practical demonstrations at strategic points within the country. Proper washing, cleaning, grading, packing, storing and transporting practices should be part of the demonstrations. Cost of proper packing materials should be reduced. Research and extension should focus on reducing cost of packing, utilizing local materials.
4. Cost of transportation services should be reduced. An increase in the number of trucks in service is needed. Reduction of import taxes for transport trucks and appropriate loans is also needed. Information on agricultural commodities shortages and surpluses by region can help transporters to be in the right place at the right time. Local self help to improve and maintain feeder roads should be encouraged.
5. The management of the railroad system and the Port of Colombo needs to be upgraded. It is recommended to hire an international management firm to restructure the personnel towards reduction of cost and upgrading the port services.
6. There are a limited number of wholesalers and retailers operating in the Pattah Market of Colombo and Municipal Market of Kandy. They are not interested in changing the present situation because they want to avoid competition. In order to facilitate the entry of more wholesalers and retailers in the urban markets it is recommended to build modern wholesale and retail markets in strategic points of the country and lease these infrastructures openly to entrepreneurs. Full feasibility studies will be necessary to justify these investments. The operations of these market infrastructures should be self-sustaining and produce profits.
7. Government should act only as a catalytic force providing to the private sector incentives, technical assistance and long-term credit. GSL should build necessary public infrastructure which the private sector cannot and should encourage private sector investment in selected facilities. The objective should be to generate efficient value by adding infrastructure and activities capable of generating employment and additional income at the production, processing and marketing levels. The construction and management of the new marketing infrastructure should be contracted through international bidding. GSL should see that prospects of good profits are there to attract companies with international marketing know-how. The GSL should invite only companies that can bring: (1) management skills; (2) high yielding and quality planting materials, (3) post-harvest technology, and (4) international market outlets.
8. In order to increase the price received by the farmers for their commodities it is necessary to organize them in groups or societies. The Federation of Thrift & Credit Co-

operative Societies Ltd. should play an important role in this task. Farmer groups and societies will help also the extension and credit services to reach a larger number of farmers. This will help to increase productivity, added value activities, post-harvest technology, and marketing at the farm level. As a result producers will increase their income.

9. Potatoes should be de-emphasized until a solution for nematodes is found. Production of flowers, ornamentals, pepper, cocoa, coffee, green-gram, gingelly, chillies and black-gram should be promoted because they have good local and international demand. Onions should be promoted for the local markets.

10. Export taxes for tea, rubber and coconuts should be phased out. State plantations should be privatized. Long-term financing for the rehabilitation of these plantations should be provided. The major export crop sector objectives should be to: (1) increase productivity and quality, (2) increase exports and foreign exchange earnings, (3) generate employment, and (4) increase fiscal revenues through reduction of subsidies and appropriate taxation of lands transferred to the private sector. Export taxes should be eliminated gradually. Technical assistance and planting material programs with heavy participation of the private sector should be in place.

11. Control and minimum support prices should be eliminated completely. They are not necessary and have been unsuccessful and ineffective. Prices in the open market have been higher. Restrictions for the import of agricultural commodities should be reduced gradually. Imports are needed to challenge and induce competitiveness for the production of export crops.

12. The priority for input supply is to increase the availability of high-yield varieties of seeds and planting materials. Incentives, technical assistance and credit to the private sector should be emphasized. Input subsidies should be avoided. We applaud the phasing out of subsidies for fertilizers. The economic level of application of inputs should be determined by crops and regions and demonstrated to producers with pilot demonstration plots. Adequate incentives to the private sector for the importation of technical inputs should be in place.

### *Credit*

13. To increase the supply of commodities for the international markets, it is recommended to upgrade productivity and quality. For this, it is necessary to (1) plant the right varieties and quality seed, (2) apply quality and economic levels of technical inputs, (3) harvest at the right time, (4) perform strict grading for quality exports, and (5) perform first class packaging, storage and transport. The Tropical Foliage and Flower Corporation is very successful and a good example that this can be accomplished in Sri Lanka.

14. The number of farmers reached by institutional credit service should be increased. Only 20 percent of the farmers of Sri Lanka are being reached by institutional credit.

Credit institutions should be upgraded for efficiency. Redundant personnel should be reduced. Training should be provided for appropriate and efficient loan appraisal, approval, disbursement and recovery. Training of accountants and automation of accounts should be implemented at the national level.

15. Long-term financing should be provided by the banks. Appropriate appraisal of the investment should be performed. Cash flow analysis should also be performed to estimate disbursement and repayment of loans.

16. Visits to farmers and rural areas should be more frequent. Credit mobile units are needed for disbursement, supervision and recovery of loans, and saving services should be organized by participating banks. The wrong perception of some borrowers that they really do not have to repay their loans when they come from government sources should be changed through re-education.

17. Interest rates should reflect inflation rates and cover administrative costs and bad loans. Financing of the modernization of production and marketing activities is a key element for the development of commercial agriculture. Cost of credit can be reduced through efficiency.

18. The Federation of Thrift & Credit Co-operative Societies Ltd. could be an important institution to channel loans to producers, intermediaries, transporters and local processors. FTCCS needs training and technical assistance to upgrade the accounting systems, and technical personnel to appraise, supervise and recover loans.

19. Sri Lanka should analyze the agricultural credit situation thoroughly and seek ways to utilize more effectively all sources of credit, both institutional and non-institutional. Improved credit services to the agricultural sector are important, as credit is the main tool to apply technology at the production, processing and marketing levels.

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## VI. LAND USE AND TENURE

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### William C. Thiesenhusen

About 70 percent of the population and half of Sri Lanka's workforce depends on agriculture for its livelihood; 24 percent of its GNP and about 40 percent of its exports (Central Bank of Sri Lanka, 1989, p. 3) come from farming. War and weather combined to push the agricultural growth rate to a negative 1.1 percent in 1989 from a positive 2.1 percent in 1988 (Central Bank of Sri Lanka, 1989, p. 1).

Production comes either from the estate sector of agriculture, which produces the bulk of tea and rubber, or from the peasant sector which produces the bulk of coconuts and spices for export and all of the paddy, the country's staple in which Sri Lanka is 80 percent self-sufficient, together with legumes, grains and other specialty crops. These latter, largely grown on rainfed areas called "highlands," probably occupy an area of 40-50% that of the area under rice, but as some of these crops become more remunerative they are being grown as second crops on asweddumized land. Tea, rubber and coconut together contributed 90 percent of all export value up to the seventies; the figure dropped to 47 percent in the early eighties and in the last three years these crops have contributed 38, 37 and 35 percent (calculated from Central Bank of Sri Lanka, 1989, p. 94; Gooneratne and Wesumperuma, p.6), both a sign that the island's export economy has become more diversified and that the plantation sector has weakened. A goal for Sri Lankan agriculture is to further diversify farm exports and promote whatever local growing of imported crops and livestock that is economically defensible.

But agricultural development should be accomplished in a manner that does not exacerbate the country's social problems. While data on the matter are disputed, most reliable sources show that there are probably about 1.2 million unemployed in the country with 120-130,000 new entrants to the labor force annually. The highest number ever accommodated with new jobs in one year was 75,000 in 1982. Currently 800,000 unemployed are youth. Poverty in the country, whose GNP per capita is about \$367, is so deep that about half of the population or 7.5 million receive some assistance in buying food from a national food stamp program. Meanwhile, income concentration is growing; a Gini ratio of .42 in 1981 increased to .56 in 1985. (Wanigaratne, January 1989, p. 1). While food is probably more available to poor Sri Lankans than it is to groups in poverty in most countries of comparable income levels, a recent decline in protein consumption has been documented (Pinnaduwa, "Food System," 1990). All of these problems are bound to become more serious if the country sinks deeper into civil war and if the economy does not rebound from sluggish growth.

In roughly the last 15 years one million agricultural acres have been added to Sri Lanka's "production plant." (H. N. S. Karunatilake, 1987, p. 44), primarily through the Accelerated Mahaweli Program but also through other irrigation schemes in the Intermediate and Dry Zones. This is a feat that will not be repeated; adding more agricultural land means that water will also need to be provided as 80 percent of undeveloped land is in the Dry Zone and irrigation is becoming steadily more expensive. It is estimated that using irrigation capacity in the Dry and Intermediate Zones maximally could put only 12 to 15 percent more of utilizable dry area land under the plough. (Karunatilake, p. 47). The Accelerated Mahaweli Program irrigated some 45,576 hectares in the maha season in 1989 and 30,076 hectares in the yala season; comparable figures for 1988 were 48,693 and 34,075 hectares. The ambitious plan has accommodated 63,659 families in 5 different "systems" in the dry zone (Central Bank of Sri Lanka, p.74-76). The Mahaweli project has cost Rs. 49,147 million to date (Central Bank of Sri Lanka, p. 76). Converting at the current exchange rate and attributing all costs to settlement (of course, electrical power is also being generated by the project) the per family cost comes to about US\$ 20,000.

## Tenure Issues

It is necessary to know the following points about land tenure issues in order to enact policies to deal with them when considering the constraints to expansion of commercial agriculture on small holdings:

- Some land tenures do not evoke optimal investment patterns. A farmer will not invest if he knows he will not be able to reap the rewards of such capital formation; his claim to land determines his access to income results of investment.
- If farmers know that their children will not be able to predictably inherit land, they will not take measures necessary or required to conserve it.
- Banks may not lend if land is owned in such a way that land cannot be used to secure the loan.
- Imbedded in land tenure systems are the production incentives so vital to farming. Is additional effort to be rewarded by concomitant additional income? If land is owned outright the answer is clearly affirmative, but lesser degrees of ownership shade these incentives.
- Sometimes land tenure patterns are such that land and water are not used to their best agricultural purpose; this implies wasting the country's very scarce resources.
- Size is usually considered as part of the land tenure problem and if sizes are too small farming may not be able to reap what economies of scale there are in marketing. In production, on the contrary, especially in horticultural endeavors, there

may be economies to small size in that family members tend to provide more vigilance against disease, pest, and fertilizer problems and do work such as weeding and general husbandry more carefully than would hired labor. Small farms also are known for using every scrap of land so that in country after country an inverse relationship between farm size and productivity per acre may be calculated, though productivity per person employed is low. In marketing, substitutes for size may be possible with farmer organization.

- Sometimes land tenure performs a welfare role which complements its output function and this welfare role is not played by any other institution. In Sri Lanka, land and water are the major resources which must be combined with people for purposes of employment and production. Commercial developments must therefore take precautions so as to not prematurely eject people--some of the poorest in society--from their only source of livelihood and jobs. Substitution of capital for people is a frequent and, when there are no alternatives, unfortunate side effect to developing a more advanced agriculture. But there are policies which can cushion the blow; for example, if vigorous agribusiness is developed it can absorb some of the displaced. In the main, however, commercial agriculture needs to be developed in a manner which does not displace people from their land and policies and technologies should provide such assurances.

## Land Use at Tenure in Sri Lanka Policies

What is the land use and land tenure situation in Sri Lanka and what policies have been enacted to cope with it?

### *Land Use: Private and Public*

1. The private sector accounts for about 17.7 percent of total land on the island and state land for 82.3 percent (GOSL, Report of the Land Commission, 1987, p. 101). This latter includes all land in farms and other resources, like forests and reserves owned by the state as well as lands alienated by it in various programs over the years amounting to about 0.8 million hectares (to 1986) or 12.4 percent of the area of the island. Counting these alienations--involving some 870,600 families--as "private," leaves about 70 percent of the island as state owned (Wanigaratne enumerates the number of beneficiaries per program under which this alienation took place, 1989, Appendix 3).
2. Private lands include the *swarnabhoomi* land grant program begun in 1979, which converts government land that has been alienated under "permit," authorized under the Land Development Ordinance (LDO) of 1935, to quasi-private property upon payment of a Rs. 250/= survey fee. The grants stipulate that land is to be passed undivided to a blood heir. Government accomplishment in this regard to date is about 101,412 hectares or 1.6 percent of national territory; this figure is included in the 0.8 million acre figure in a. 1 above (GOSL, p. 101-02). Some conversion of permits to *swarnabhoomi* grants were given at the urging of USAID under self help provisions of PL480. A late report

(Nelson Vithanage memo to John Flynn, February 20, 1990) shows that 32-37,000 were given out in the 1987-89 period. Whether titles have resulted in a faster rate of property consolidation is a matter for further inquiry.

### *Land Use: Small and Large farms*

1. Among the rural population, 8.3 percent is employed in the estate sector and the vast bulk of the remainder in the small farm sector. About 538,200 hectares (or 27 percent of total farm hectareage) constitute the large farm sector; 1,435,631 hectares (73 percent), the small farm sector. Unlike income, the distribution of land has been becoming more equal lately in Sri Lanka as holdings are fractioned (Wanigaratne, 1990, p. 21).

2. A major problem in the small farm sector, one which is particularly prominent in the South part of the country in the Wet Zone, involves "private accumulative tenure" in which small owners are deprived of achieving full benefit of their land by a stronger party who farms a number of plots in his own interest, often reducing the holder to a serf on his own farm. A recent estimate places the number of hectares involved with these kinds of tenure at over 200,000 hectares or about 10 percent of agricultural land. This means that the small farm sector's land above (in b.1) is overstated (Wanigaratne, 1989, p. 37). Accumulative tenure seems to work through the device of rural credit (the credit issue is discussed in detail in the section by Cesar Amorin); Sanderatne and Senanayake (1989, p. 15) believe that informal credit is responsible for about half of total lending, one third of that at interest rates over 25 percent, about half was for agricultural production purposes, and 19 percent is secured with immovable assets (p. 20-21).

### *Land Use: For Crops and other purposes*

1. In Sri Lanka, 44 percent of the agricultural land is used for seasonal cropping. 32 percent for paddy and 11 percent for other temporary crops; permanent crops occupy 56 percent of the agricultural land, 46 in plantation crops and 10 percent with other perennials. (GOSL, December 1987. Table VII p. 149).

2. About 31 percent of the national territory is considered "agricultural" and this amounts to about 2 million hectares (1,973,840 hectares or 4,877,358 acres) (GOSL, p. 151). Another third of the country's land is under forests and wild life conservation areas (GOSL, p. 155). In 1985 it was estimated that 23 percent of the national territory was under forest cover; this figure was 50 percent in 1950 (GOSL, p. 164), the diminution leading to land degradation and depletion of water supplies; the Land Commission recommends that this number be maintained (but not necessarily in the same location for some present reserves may be needed for settlement if population density is heavy in one particular area); while it is below the world average, it is quite near the Asia average for forest cover (GOSL, p. 165-66). The Land Commission believes that Sri Lanka cannot afford more reserves than this given its population pressures.

### ***Land Use: Are There Idle Lands?***

1. Sixty percent of land in agricultural holdings in the country is in the Wet Zone; little land for agricultural expansion remains there (GOSL, p. 156) and what land is idle is hard to mobilize since it is scattered so widely and in such small blocks.
2. The Land Commission estimates that there are 2 million hectares of rainfed lands in the Dry Zone that might be brought into agricultural use, but that some of this land is quite marginal, some is covered with forest, and others need some form of "technical advance," presumably some technological progress in the area of dryland farming, like cultivars which will withstand drought and still be productive. Presumably a regularized irrigation source like that made possible by wells would be most helpful (GOSL, p. 156-157). Dry Zone land in this category includes some land in the Mahaweli scheme area above command lands (0.24 million hectares) and rainfed lands outside of the scheme areas altogether (p.176). While this amount seems substantial, the FAO in conjunction with the Ministry of Lands, estimates the island-wide number to be 2.7 million hectares; this latter figure has been disputed as too high by the Conservator of Forests and the Director of Agrarian Development (GOSL, p. 160-161). The Land Commission accepts the 2 million hectare figure, but statements of several Ministers of Agriculture since have thrown doubt upon the figure; they felt it unrealistically large. Moreover, a substantial amount of this has probably already been encroached upon though no one knows precisely how much. A study on encroachment in 1979 set the figure at somewhat under 1 million hectares. The President's million acre scheme--inspired by the figures in the Land Commission Report and his desire to ameliorate rural poverty--sets out to regularize some of this and distribute other land. It now appears as though the encroachment study underestimated the amount of illegal occupation of land in the country which probably exceeds 1.2 million acres. Because the Presidential Task Force on Land responsible for administering the Million Acre Program has been able to discover only 259,418 hectares or about a 641,000 acres, 80 percent of this is in the Dry Zone (Presidential Task Force on National Land Utilization and Distribution, Progress Report WPR 16, July 1990), on the basis of an AGA division-village canvas, most believe this confirms that the Land Commission overestimated land available for agricultural expansion in the dry zone. The Presidential Task Force estimates that after it identifies one million acres it will have pretty much exhausted the land that can easily be farmed in Sri Lanka.
3. More land could be freed up if high yielding clonal tea material (VP) were utilized for more plantings, thus intensifying the stand. But this replanting is moving slowly (Ministry of Plantation Industries, p. 41-43; 165). The Commission documents that there is also marginal plantation land in the Wet Zone that could be better used for settlement purposes (GOSL, 176-181). Currently marginal tea lands are located on about 20,000 hectares (GOSL page 181) according to a 1981 estimate. The Commission also feels more interplanting should be done in some crops. In coconuts only about 20 percent of the feasible area is currently intercropped (Ministry of Plantation Industries, 1989, p. 86). Furthermore, there are other low use intensity lands in the Wet Zone where diversification would be economic. The Commission totals all of this Wet Zone land available land

at another half a million hectares. The problem is that some of the marginal tea lands that remain are highly erodible, even fragile soils. Other land is left to low intensity uses or even idle if owners find more lucrative, but temporary employment elsewhere. After a season or a year they intend to eventually return.

4. The Land Commissions' conclusion that 2.5 million hectares or nearly 40 percent of the total land area is "developable but virtually lying idle." (P.ii) seems to be a rather dubious one.

### *Land Tenure*

1. The last agricultural census--the one in 1982--showed that holdings of less than two hectares accounted for 91 percent of total holdings in the country and two thirds of the land area (Wanigaratne, p.5).

2. The trend toward smaller holding size continues. In 1946 the average holding size of farms under 8 hectares was 1.34 hectares; it dropped to 1.09 hectares in 1962 and 0.80 two decades later (Wanigaratne p6). This implies a mean of perhaps 0.7 hectares today.

3. Farms under 0.4 hectares are growing in numbers especially quickly. They made up 12 percent of paddy land in 1962 and 43 percent in 1982 (Wanigaratne p. 7).

4. Fragmentation is increasing. Number of parcels per cultivator was 2.5 in 1962 and 3.2 in 1982 (Wanigaratne, p. 9).

5. But actual physical land fragmentation does not capture the essence of sub-division.

i. When lands reach some sort of minimum hectarage, the area of which varies according to local conditions, farms are no longer divided; rather, coowners and tenants share the produce. This is often done according to an informal agreement among heirs and tenants (West: Wanigaratne, 1989; Land Commission). Sometimes they divide the paddy among all the heirs equally, after 50% for the tenant is subtracted. However, vegetable crops which can be grown in another season are the property of those land owners and tenants who remain on the farm and do the agricultural work and put up the required capital to raise the crop. Conservatively, coownership probably affects from one third to half of privately owned land in the wet zone, and the trend to coownership is increasing (West, p. 11). Pinnaduwaage recently studied problems of small size in a random sample of 771 small tea producers in 5 AGA divisions of Kandy District whose average size was from .70 to .98 hectares and concluded that sub optimal employment of the operator's family and high operating costs were major problems. Another problems was that it was difficult to persuade the smallest growers to uproot their low yielding jat varieties to plant newer and better high yielding clonal cultivars, since they would not have resources enough to feed their families while the replanted areas were regrowing (a process which under the small tea growers subsidy program takes 5 years). In pure tea

stands single ownership was the rule but in mixed stands (several crops besides tea) there was some co-ownership of small plots (S. Pinnaduwege, *Tea Small Holder Sector in the Kandy District*, May 1990).

- ii. If the area of the farm is fairly small and of varied quality and all or most heirs desire to farm it, they may take turns using the best land, with one taking the best land in one season and the other the next (*kattimaru*).
- iii. When land is especially limited in quantity, one heir may farm it one season, the other the next and so forth (*tattumaru*).
- iv. Sometimes, if water comes to land via a major irrigation work--there are about 110 of these in the country besides the Mahaweli--some farmers do not get water during the dry season. They are compelled by the scheme to share land with those who do--only for the season (*bethma*). (This is a variant on a traditional system also called *bethma*, but in the Mahaweli those at the head who share their land with those at the tail obtain for themselves the use of part of the sharer's parcel during the season in which water flows more abundantly). Scudder and Vimaladharm report that one problem with the *bethma* system is that the partner who does not "own" the land is much less motivated to maintain the irrigation system including access and drainage canals and bunds; also he is less inclined to clean up plant residue so that the owner can prepare for the next season's planting (p.14). Evidence is strong that some illegal diversion of water from System H by traders has helped to make water shortages there more serious.
- v. Villages in Sri Lanka are often made up of closely related people so that if some villagers did not inherit land, they may be sheltered by those who did. We interviewed at several villages in hill country which were composed of 250 families, only 100 with land; the other 150 live with those who have land and find what occasional wage work they can. This aspect of village structure, which permits large amounts of underemployment is probably responsible for the relatively slow farm to city migration in Sri Lanka.
- vi. Very little can be done about the small size and coownership problem from the standpoint of policy. What is needed is economic opportunity either inside or outside the sector. Some in the government think that title registration, a measure that has been discussed for years and has been endorsed by the Cabinet of Ministers will ameliorate this problem--at least it will name one of the coowners as manager and pay indemnity to the rest (Cabinet Memorandum 1061, 3/4/5/28). Two bills will be presented to Parliament, both drafted by the Ministry of Lands, Irrigation and Mahaweli: 1) the Surveying and Mapping Act; 2) the Registration of Title Act. Both are expected to be approved since they were recommended by the last two Land Commissions, they were part of the President's electoral platform and the Task Force on National Lands Utilization and Distribution has recommended them; a recent (July 1989) ADB evaluation team which surveyed its Land Use Planning assistance also called for passage of such legislation.

The most important impact of title registration, as currently conceived, will be on private property and not on the "public sector lands:" village expansion, land reform property or other land being alienated under the LDO permits or grants or under leases--some as long as 99 years--by the Crown Lands Act (1949). These "titles" are usually clear enough.

The registry of deeds presently used is based simply on boundaries, it does not connect the piece of land in question definitively to an owner, it may be outdated since many owners die intestate and informally pass their land to a number of children (and this may have already been the practice for generations), and deeds are often registered when drawn up by a lawyer and are, unrecognized by a representative of the state. The biggest effect of the two bills in question, the government anticipates, will be on private property that has multiple owners, particularly village lands in the Wet Zone. After a hearing, the procedure will place this land into the hands of the most legitimate owner. It is anticipated that some land will simply be passed to a trustee or manager who will be one of the claimants; he will have the right to sell or mortgage that land on behalf of the remainder. If some of the heirs are out of the country or simply cannot arrive at an accord. When this process is complete clear title will be guaranteed and lending institutions will be able to direct their attention to the feasibility of the project being financed and not to checking whether or not the title is clear. This latter occupies the major part of the time of lending institutions now. But the process is even more onerous for borrowers who often spend months gathering proper documentation required by the bank on their ownership status. The government anticipates that the major contributions of a clear titling program will be that it will streamline loans, eliminate the coownership problem, give incentives for more on farm investment by those who are clearly owners, and develop a land market.

The steps will be 1) the area in which title is to be regularized is selected; 2) a cadastral survey is performed on that land to identify each and every parcel of land; 3) a public inquiry (not a land *kachcheri* to which any one who wants can attend as is the case in LDO-alienated lands) involving the claimants to one piece of property upon the posting of a public notice will be held, the case to be heard by an adjudicating officer who has the power to select the most qualified claimant; 4) a certificate of title is issued and it is registered in the Land Registry office at the AGA division level. While this prospective law may facilitate credit and it may assist in creating a land market, it will probably not eliminate coownership. No one will sell claim to their only income-earning resource unless they are forced to do so and the government has no desire to resort to coercion in such matters. Recognizing this, some in government believe the program will have to be coupled with incentives in addition to indemnification, like a parcel of alienated government land. The question is whether enough lands exist for this purpose in Sri Lanka. How family members will be indemnified when the most legitimate "owner" has no cash to do so is also a nagging problem.

In some sense Sri Lanka will have to live with her small farm size problem for many years to come regardless of whether a land market develops and some consolidation results. Farm combinations and coownership elimination will be an event that is rather marginal to the agricultural mainstream in the country for some time. The cases of South Korea, Taiwan, and Japan show that small size is often not a barrier to the development of commercial agriculture per se and some types of agriculture (like horticulture which is very labor intensive and husbandry demanding) thrive under the care given by interested family members. What is needed are producer organizations for the purpose of receiving extension help, receiving mutual liability credit, producer contracts in outgrower schemes, assembly for the purpose of marketing, group protection against arbitrary agro-industrial power, etc.

#### *Other Land Tenure Problems Unrelated to Size*

In some of the river irrigation schemes, traders have been buying up land rights from 99% lease and permit holders (permit settlers need to prove they are bona fide farmers, agree to live on their land, and must pass on their property to a single blood line), a practice that is strictly illegal. Leases and permits are given in the Mahaweli and other areas of the country where there are lands which can be identified as marginal agricultural lands, lands that are a residue from the country's agrarian reforms (land passed to the government because there was never a clear plan regarding how to distribute this property),<sup>1</sup> or proximate government property for which villages petition on the basis of Village Expansion Programs of the government. Many of these are objects of a free competition at land *kachcheries* (after 1979 temporary permits could lead to *varnabhoomi* grants), but in river development schemes, preference is given to those lands developed by the irrigation works. This land is given out under the Land Development Finance Act of 1935. Leases are given out under the Crown Lands Act of 1949. Traders usually amass parcels such that the permit holder becomes a wage laborer on his own land. The Land Officer who is supposed to be providing vigilance in these matters knows this is happening but since no paper ever passes between the parties, the trader always claims to be such. Owners may be reduced to wage labor status because a) they lack capital and traders have it; b) after borrowing the owner may not be able to repay so the trader takes his land; c) the traders may squeeze the downstream farmers by reducing water flow and eventually taking them over also; and d) there is complicity in all this by certain local and/or public officials. The Mortgage Release program, operating in Polonnaruwa, is one in which official calculations are made on credit repay-

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Lands that were taken over in the land reforms of 1972 or 1975 were alienated to various government agencies to distribute or operate. A residual 100,000 acres or so remained with the Land Reform Commission. Some of this was auctioned off for middle class and/or urban development. There are 30,000 acres of this land remaining with the LRC, which is charged with dispensing it by December, 1990, whereupon the LRC will be dissolved.

ment of farmers to traders and releases are granted to paid-up farmers. Scudder and Vimaladharm, speaking only of the Mahaweli report, "according to our evidence few...have lost control of their land." (p.5)

2. The state also leases out lands, on annual or even on fifteen to thirty-year leases, the rental being a source of government revenues. This is done where it is obvious that the leasee will not homestead land or the land is not fit for dwelling or when the government wants to reserve land for a possible infrastructural work or some other purpose. These are frequently better lands than those alienated under the LDO. Lands given out for agribusiness or for more commercial purposes are given out under this conveyance, but some peasant families also have their land under a 99 year lease arrangement.

3. Absentee ownership is common in many parts of the country and is especially obvious on coconut lands where owners may simply return to harvest each year. The Agriculture Production Act of 1972 was to have dealt with this issue, but it was not enforced.

4. *Chena*, which is cultivation of rainfed state forest land on a swidden or slash and burn basis, continues often as an encroachment (squatting) in the Dry Zone, but it is becoming more stable given the present high population density on the land.

5. Encroachments (squatting) on state or private land of many types continue to be a problem in that while reflecting land hunger, the practice compromises the conservation of the soil resource. Progressively poorer lands, ones more easily erodible, more jungle areas with more irreplaceable ecological features are being damaged. Therefore, the government has declared that encroachments which occur after October 31, 1989 are illegal and the government will not reward them with a land permit as it did so often previously. This is being patrolled by cadre of village level government workers, among them extension workers who were recently converted to village officers (*Grama Niladhari*); the effectiveness of this vigilance and whether the government will be able to hold the line against encroachment this time (programs holding the line on encroachment have been attempted previously) is unknown, but most think that the age old battle between conservation and agriculture (and people's livelihoods) will again be won by agriculture and encroaching will continue pretty much as before.

6. Tenancy, usually share cropping, continues to be quite common and while the Paddy Lands Act of 1958 guaranteed a sharing scheme which allowed tenants stability of tenure and three fourths of the produce, the conditions of this Act are not followed and some of the provisions which gave protection to the tenant were reversed by the Agricultural Services Act of 1979. We saw a number of 50-50 shares in Nawalapitiya, for example. A recent survey show that owner-cultivators account for 68 percent of the cultivators on the island and tenants for 27 percent; surveys in the 1930s showed that three quarters of paddy cultivators were tenants. (Wanigaante, p. 17).

7. There is also considerable land belonging to temples or shrines which are called *devalgam* tenure (belonging to Hindu shrines) or *viharagam* tenure (belonging to buddhist

temples). *Ninda* grants were land grants bestowed by ancient Sri Lankan kings to individuals and temples for services rendered. There is probably about 200,000 acres in all of these combined in the wet zone (Wanigaratne, 1989, Appendix 2). It is widely agreed that production on those lands is low and some way should be found to maintain the cultural and regional significance of this property while encouraging more production on it.

8. According to the 1982 census of agriculture, about 11 percent of farmers in the country are absolutely landless; this represents a 36 percent reduction from 1962 and this is probably due to the land reforms in the seventies, the programs of village expansion onto government land, and dry zone settlement projects.

### **Economic Aspects of Land Tenure**

To cite a couple of cases:

1. While coconuts may be intercropped before the fifth plantation year and after the 20th, this tends not to happen in cases of absentee ownership. Twenty percent of land suitable for intercropping in coconuts is not intercropped.
2. While bunds could be planted to crops, this tends not to happen in co-ownership.
3. Where ownership rights are not clear or families cannot agree on division of the undivided shares, land may be grown to paddy and left idle the rest of the year.

Much of this cannot be altered by public policy; many of these tenure practices have evolved to help local societies cope with specific societal problems. In broad outline, the tenure system will continue until agribusiness and other opportunities develop outside of farming per se to draw out the population and/or more land becomes available inside the farm sector or farming becomes more labor intensive. In general, 1978 to 1982 were good years in terms of economic growth and job creation. The setting aside of various constitutional provisions by the government in the early eighties and the onset of the conflict changed the business climate in the country after that however. On the other hand, where a produce market appears, so may tenurial devices that will facilitate production. When vegetable markets began to flourish, tenure patterns and technology adjusted in the valleys around Nuwara Eliya and production was forthcoming.

### **State Plantations**

Major export crops in Sri Lanka are tea, rubber and coconut; they are grown on private estates, state plantations, and private small holdings. The world share provided by Sri Lanka of all three has dropped sharply over the last two decades. Many believe this decline began with discussion of who should own the plantation after the British left. This led to lack of investment which was not corrected after the land reforms of the seventies. The state corporations which produce the bulk of tea and rubber are considered to be "in crisis." A recent USAID report notes that the Janatha Estates Develop-

ment Board (JEDB) and the Sri Lanka State Plantations Corporation (SLSPC), both under the Ministry of Plantation Industries, are two of the largest estate industries in the world. They own or control 518 plantations (Ministry of Plantations Industries, p. 129) covering 274,855 hectares (p. 128), employing 402,000 on a daily basis and a further 22,500 monthly-paid staff (USAID Memo n.d.). They contributed 18 percent of the country's foreign exchange in 1988. Even so, they are technically insolvent, with large debts and severely eroded equity bases. In spite of favorable tea prices, high interest rates and operating costs combined such that the JEDB and the SLSPC reported a combined loss of about \$19 million in 1988. Contraction has meant that the proportion of the labor force being employed by this sector is off sharply from the fifties and sixties.

In 1970 the plantation sector employed 20 percent of the workforce; now the figure is less than half that. A study in the mid-eighties reported "Despite the continuing importance, the plantation sector as a whole has been gradually slipping from the place it had historically occupied (in terms of) plantation land as a percentage of total agricultural land, the relative contribution to the GNP, export earnings and employment." The entire sector has been subjected to a "long period of sectoral stagnation" (Gooneratne and Wesumperuma, p.7). Gooneratne and Wesumperuma present data showing that both the output of tea and coconuts experienced a persistent decline in the 1970s. In tea the downward trend continued into the early 80s while in coconuts there was some slight improvement. Rubber entered a period of declining output in the late seventies. All three now show low yields and this has been traced to rising fertilizer costs, lack of proper replanting and infilling, high cost of energy, insufficiency of investment, and lack of proper soil conservation especially on slopes where tea is grown. Recent data provided by the Ministry of Plantations Industries shows that rubber yields and production dropped in the eighties (p. 141, 142, 157, 159 and 168) and tea production dropped (Ministry of Plantation Industries, pp. 152, and 162) as tea yields grew modestly (p. 163, 136) while acreage diminished (p.133) on account of the marginal tea lands program. Still tea yields in Sri Lanka are below yields in all other major tea producing countries (p.34). Coconuts and coconut products showed no clear production trends in the eighties, but they seemed to fare somewhat better than tea and rubber in terms of production and yield; exports showed no trend in real terms (p. 97-98), but domestic consumption rose.

It is generally agreed that the government estates need better management and a high level task force has been appointed by the government to look into the possibility of contracting management from the private sector. One of the major concerns in the present system are the social costs being borne by the industry. The real wage rate index on tea and rubber estates rose from 98.3 in 1981 to 123.4 in the last quarter of 1989, exhibiting the power of the rural labor movement. In industry, by contrast, the real wage rate dropped from 96.2 in 1981 to 90.2 in the last quarter of 1981; in services the corresponding numbers were 93.2 and 66.4 (Central Bank of Sri Lanka, Table 25). In the meantime, the volume of minor export crops rose from 7,500 million tons in 1970 to 15 million tons in 1989, cinnamon accounting for about one half the volume of MEC in 1970 and, as the MEC program to expand these specialty crops met with some success, one third in 1989.

## Irrigation Schemes

Concern has been voiced that Mahaweli settlers have not raised their productivity and, hence, their incomes as much as anticipated. Until they do so, employment will be an enormous problem. Farms which were distributed are small; it has always been anticipated that jobs outside of the parcel would absorb labor of the next generation. A recent report on the matter (Scudder and Vimaladharmma) based on a carefully drawn sample noted that an estimated 20 percent of settlers cannot cultivate the 2.5 hectare irrigated portion of their parcel because of such problems as lack of credit, inadequate land preparation, and irrigation system defects. In system H particularly, settlers slipped backwards economically during 1989 because of inadequate water supplies. A small improvement was reported for settlers in C and B in 1989. Few settlers were reported able to take out bank loans and, therefore, more have become dependent on local traders, though the situation has not gotten so bad that they have as yet lost land to them. Scudder and Vimaladharmma believe that diversification would help to raise farm incomes (and they endorse the USAID MARD program), but feel that it is not proceeding quickly enough. (The June 1987 discussion of Rolando Jiron on dry zone diversification is highly useful in this regard). Scudder and Vimaladharmma contend, "during early stages of industrialization, the rising disposable income of large numbers of small-scale family farms is the engine that drives development forward" (p.7). "As incomes rise, so will demand of tens of thousands of settlers for housing materials and household furnishings, and a widening range of other goods and services that can be provided by the regional economy" (p.14). They also urge more attention to tree crops and to dairy production and to other livestock because raising them would decrease out-of-pocket expenditures, they would have important nutritional effects, and the employment opportunities for women and children would be increased.

Supporting discussions of diversification, Wanigaratne (1987) shows that between 5-6 percent of the annual Sri Lankan rice crop comes from system H, but gives evidence to show that paddy culture, with its stagnant yields and rising costs, is not sufficient to generate the promised employment opportunities in the Mahaweli and the situation will become very serious in the upcoming generation. Low profit margins in farming pressures settlers to sell more paddy than they would otherwise to remain solvent and to do so early in the season when prices are particularly low. Nonetheless Wanigaratne reports that settlers were doing better in income terms at the time of his study than when the project began and have a higher income than those in nearby villages. He describes the lack of regional development, however, and calls for rapid rural industrialization. He is also concerned with the fact that so much of the investment capital which is generated in the settlement area leaves for the Wet Zone and, particularly, for Colombo and argues for government policy to prevent that capital flight (Wanigaratne, 1990).

## Constraints and Conclusions

In general, agriculture is so labor intensive in Sri Lanka and so little land remains, assuming that the estate sector is sacrosanct as an earner of foreign exchange, that most of these land tenure problems will have to be solved outside of agriculture. But there are some efforts to deal with them inside of farming. Recent government efforts to deal with these issues are the anti-encroachment provisions, the president's million acre program which has identified some 640,000 "marginal" acres for distribution to peasants, and a proposed title registration program which is before the cabinet of ministers. The continuation of Land Development Ordinance and Village Expansion and CLA fit into this as do special programs like NADSA, soon to be renamed the Hadabima or Heartland program concerned with settling farmers on marginal tea lands in Kandy District. One should also consider in this category irrigation schemes, which do not seem to have much remaining expansion possibility, though the program of well subsidization in *Purana* productivity villages in the Dry Zone seems to have such potential if one were able to determine whether perforation were harming the aquifer and when problems with encountering brackish water would occur.

In conclusion, what are the farm level constraints to the development of commercial agriculture in land tenure and natural resource issue terms and how might they be addressed with studies, programs or policy? The following is a list of constraints, each followed by a series of recommendations:

*Constraint: Complex patterns of land tenure, many involving smallness and most of these involving income and resource subdivision exist in the agricultural sector in Sri Lanka, as do more exploitative accumulative tenures, which are held together with informal credit. These are often barriers to increased investment and production.*

### *Recommendations*

1. Any policy which creates stable jobs inside (by expansion of agriculture at the extensive or intensive margin) or outside of farming will help to simplify the land tenure pattern and eventually lead to the creation of larger farms more adoptable to marketing pursuits, but this will take a massive effort given the fact that 70 percent of the population still are in the agricultural sector. Land and water resources are dwindling, and massive amounts of unemployment remain. The economy is not likely to revive until the ethnic strife stops and it will take years after that to tighten the labor market.
2. The government should speed up its permit-to-title program, it should encourage investment funds to remain in the Mahaweli and, after proper study, it should expand its well subsidy program. It should press forward with programs that convert marginal plantation land to conservation reserves or to programs that turn land over to farmers who are encouraged to use them intensively for horticultural purposes.

3. Some land tenure patterns adjust more readily than others to the exigencies of the market; in some areas of marginal tea lands where vegetables are grown, for example, coowners wherever they live and however their income is made return to divide the paddy production, but those owners who actually farm the land divided the vegetable production in the season which follows rice. Surely other patterns exist which may flexibly adapt to needs of the market and when dependable demand is present, production will follow. A study of these adaptable land tenure patterns is needed as is a study linking land tenure to agricultural production determining the impediments to increasing output found in the land tenure system.

4. Renewed effort is needed by the government to discourage absentee landlordism which is clearly a land tenure form which wastes resources. For example, coconut farmers who live in cities and visit their farms only to harvest should be encouraged to sell their properties or, at the very least, be compelled to allow someone to intercrop them. And government efforts to control exploitative tenures such as Gambara and other accumulative forms such as those now appearing in the Mahaweli should be redoubled. These land tenure patterns often allow non-owner traders, through their manipulation of informal farm credit to reduce peasants to serfs on their own land and are associated with the diversion of water away from its intended use. Unfortunately, they frequently exist with the full knowledge and even complicity of government personnel; their existence is inconsistent with the needs of commercial agriculture.

5. Ongoing programs provide laboratories for the study of such matters as crop and employment intensification, and studies should be undertaken to calculate their job potential, their commercial possibilities, and their rate of return (given the fact that they frequently involve government subsidization, they might prove to be unduly high cost on a per settler basis). These include the programs for industrialization in the Mahaweli and diversification out of rice, marginal tea lands subsidy programs, minor export crop programs, and NADSA, soon to be called the Hadabima project.

*Constraint: In order to develop commercial agriculture, organizations of producers that might foster economies in marketing, especially quality control and assembly, but also for mutual liability credit, receiving extension help, etc. are needed.*

**Recommendation:**

It is clear that consolidation of farms in most cases is not possible in the country given the amount of unemployment that would doubtless result. While there may be isolated areas where this undesirable social effect would not result from farm combination, in most cases production can take place--and very efficiently--on fairly small farms. If farmers are well organized, they can compensate for size by having their groups form the nexus for mutual liability credit, product assembly, transmission of quality control standards, extension help, contract farming and outgrower schemes, etc. While US farming developed on the basis of ever-larger farm units, where population pressures were higher, as in Japan, South Korea, and Taiwan, models of farming based on small and

even tiny farms on which farmers were highly organized were exceedingly successful. More study of these East Asia models by Sri Lankans is needed; perhaps a Sri Lankan research organization might undertake to do a study of the situation in these countries, exploring their applicability. Or, at the very least, several Sri Lankan social scientists might visit South Korea and Taiwan to attempt to determine the basis for their organizational success. It would seem as though the crops in which Sri Lanka would have some comparative advantage would be tropical fruits, vegetables, spices, and flowers. These are crops which yield high acreage values and are labor intensive. Examples of how most of these can be profitably grown on small acreages and the organization required to do so is readily available in East Asia. This work should be complemented by a study of existing farmer organizations in Sri Lanka. Which organizations already exist in the country in which training might make performance of these economic functions possible? The experience of several USAID supported projects in water management should be instructive in this regard.

*Constraint: The extent of the natural resource base onto which agriculture could profitably be expanded (without incurring irremediable ecological damage) is not known with any degree of assurance.*

**Recommendations:**

1. An inventory should be undertaken to check on the accuracy of the Land Commission's contention that 2.5 million hectares exist in Sri Lanka for agricultural expansion, since much doubt has been thrown on this finding. The study should determine the Wet and Dry Zone land which is available to be farmed considering both the employment and the conservation/ecological needs of Sri Lanka. It should assess the amount of encroachment and the existence and location of *chena* and determine how much farmable land is already extra-legally under the plow. It needs to determine how much dry and intermediate zone land can be farmed with existing rainfall and find out how much of this land needs irrigation and from where that irrigation can be drawn, including an assessment of that irrigation possible from wells and the economic feasibility of such irrigation. This survey should be complemented by a determination of how much land in the dry and intermediate zone could profit from the drilling of new wells and rehabilitating old ones and the effect of that drawdown of water on the capacity of the aquifer to continue supplying water in the future. The technical part of the survey should also address the question of when water salinity is likely to become an issue. It should determine what dryland technology developed at the international center in Hyderabad, India, might be applicable to drought prone areas of Sri Lanka.
2. The connection between rural credit and land tenure systems needs to be examined and the possibility of using in Sri Lanka programs like mutual liability rural credit and rotating credit funds developed by the Grameen Bank in Bangladesh and the Inter-American Foundation should be explored. As conditions stand, small farmers show a high default rate, their credit is highly subsidized, land is seldom foreclosed upon, debts are routinely excused prior to elections, and banks do not loan to peasants without a 50

percent guarantee. Would a land registration titling program improve that record by encouraging banks to give more time to project design as they need to spend less in determining land ownership?

***Constraint:** Lack of clear titles have been deemed by the government a deterrent to investment in farming and to the development of a land market. It aims to establish a program of title registration together with a cadastral survey of private holdings.*

**Recommendations:**

1. The land title registration program should commence in an experimental area and its social consequences should be carefully monitored. The concern is that while title registration is likely to result in the development of a land market and while farmers will doubtless invest more in a farm which is clearly theirs, it will likely not, as the government seems to expect, affect very much the problem of co-ownership while lack of jobs is such a compelling problem. The program might also result in other types of expulsion from the land. Nonetheless title registration is probably a sound investment in the future of the country in which one day clear titles will form the basis for a land market. It is possible that some co-ownership exists merely to protect the inheritance of the co-owners because of the current awkwardness of the land transfer mechanism, a problem which title registration could rectify. Therefore, the program is not a "cure" for the land tenure ills of the country; it is merely a way to clear up titles so that one day when heirs have other alternatives they can conveniently sell out their shares to a sibling who wants to remain in farming. It might be possible, if the survey included a study of land quality and land use planning, as is contemplated, owners could be obliged to pay a land tax. If properly drafted, a land tax could compel owners to either produce on the land or sell it to someone who would. The institution of a land tax is highly recommended. It would also be possible to link land registration to a program providing alternative land, services, and/or other employment to those who agree to sell out. If the latter were attempted, the need for the entire effort to be carefully studied to see how social relations work themselves out would be accentuated. Work on this could begin in those areas in which the shift from permits to grants was made as much as 10 years ago. What happens to this titled land? Has production increased? Does ownership change?

2. For studies required in these areas, USAID can look to the Agrarian Research and Training Institute or the Institute of Policy Studies which have accumulated substantial experience in these matters in Sri Lanka.

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## ANNEX A

### LIST OF PEOPLE INTERVIEWED

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#### USAID/DONOR PROJECTS

Alex, Gary E.	Agricultural Project Officer
Brown, Allison	Agricultural Project Officer
Danes, Samuel R.	Marketing Consultant
de Soysa, T.	Agricultural Economist
Ernst, Ulrich F.W.	Program Economist
Flynn, John	Chief, Agricultural Office
Goldensohn, Max D.	Chief of Party Mahaweli Agriculture & Rural Development Project (MARD) Pimburattewa
Gleason, Jane	Economist, Mahaweli Agriculture & Rural Development Project (MARD) Pimburattewa
Hadley, Stephen J.	Project Development Officer Office of Private Sector Development
Hittle, Carl N.	Research Agronomist, Mahaweli Agriculture & Rural Development Project (MARD) Pimburattewa
Jiron, R.	USAID/Sri Lanka Agricultural Economics Advisor, ABT
Reusche, Gary A.	Extension Seed Specialist Diversified Agricultural Research Project
Selleck, Bill G.	Chief of Party, Diversified Agricultural Research Project (DARP) Peradeniya

Vithanage, Nelson

Agricultural Economist

West, Martin

Horticulturist, Mahaweli Agriculture &  
Rural Development Project (MARD)  
Pimburattewa

## SRI LANKA GOVERNMENT

Abeyratne, A. S.

Deputy Director, Dept. of Livestock  
Development & Planning  
Ministry of Agriculture

Ariyaratne, H. P.

Deputy Director of Research  
Mahalluppalam District  
Department of Agriculture

Amarasiri, S.

Additional Deputy Director (Research)  
Ministry of Agriculture

Abeyweera, H. M.

Deputy Land Commissioner, Kandy District

Banda, Puroli

General Manager, Keppetipola Cooperative  
Nuwara Eliya

de Mel, A. M.

Deputy Director (Education & Training)  
Department of Agriculture

de Silva, M.

Economist, Department of Minor Export Crop  
Ministry of Agriculture

Ekanayake, M. B.

Land Officer, Kandy District

Fernando, J.

Director, Central Agricultural Research Institute  
Ministry of Agriculture

Gurusinghe, D. de A.

Research Station, Department of Minor Export  
Crops, Matale

Gunasekera, M.

Assistant Director of Seeds  
Ministry of Agriculture, Nuwara Eliya

Gunawardena, S.D.I.E.

Dean, Faculty of Agriculture  
University of Peradeniya

Gunasena, H. P. M.

Dean, Faculty of Agriculture  
University of Peradeniya

Gunasekera, Sudath	Project Director, NADSA
Gawarammena, C. C.	Chief Clerk, Mahaweli Economic Agency, Nuwara Eliya
Gumarathbanda, J. M.	Unit Manager, MDA, Nuwara Eliya
Gauthamadasa, K. H.	Chairman, Gramodaya Galpalama Kandapola
Hewavitharane, F.	Food Technologist Soyabean Food Research Center Ministry of Agriculture
Jayasinghe, Harry	Director of Planning Ministry of Agriculture
Jayawardena, G.	Director Central Agricultural Research Institute Ministry of Agriculture
Jayaratne, R. S.	Secretary Ministry of Plantation Industries
Jayawardana, C.	Senior Assistant Secretary Ministry of Lands, Irrigation & Mahaweli Development
Mr. Jayaratne	Research Officer Marketing & Food Policy
Jayasinghe, L.	Deputy Manager, Employment Investment and Enterprise Development Division Mahaweli
Jayawardena, G.	Director Central Agricultural Research Institute Ministry of Agriculture
Karunaratne, G.	Assistant Regional Manager Tea Small Holders Development Authority
Mohideen, Faiz	Director, National Planning Department Ministry of Policy Planning & Implementation
Modagam, J.	Acting Commissioner Agricultural Services Department

Perera, Mano	Consultant to Department of Planning Ministry of Agriculture
Premachandra, J.	MDA, Nuwara Eliya
Pinnaduge, S.	Reader, Department of Agriculture Economic & Extension, Preadeniya University
Ranaweera, Nimal	Deputy Director, Economics and Planning, Dept. of Agriculture, Economics & Projects, Ministry of Agriculture
Sanderatne, Nimal	Sr. Research Fellow Institute of Policy Studies
Speldewin, K.	Director of Planning, Ministry of Lands, Irrigation & Mahaweli
Seneviratne, D. G. P.	Director, ARTI
Somaratne, S. M.	Assistant Director of Agriculture Department of Agriculture, Nuwara Eliya
Sandaratna, N.	Director, Institute of Policy Studies
Senanayake, W. D. A.	Director, Post Graduate Institute of Agriculture, University of Peradeniya
Mr. Samarasinghe	Acting Deputy Director (Horticulture) Ministry of Agriculture
Samaraweera, P.	Deputy Director Water Management Secretariat Mahaweli Authority of Sri Lanka
Thenuwara, Percy	Acting Director, Sri Lanka Export Development Board, Colombo
Tennakoon, A. S.	Deputy Director Department of Minor Export Crops Ministry of Agriculture
Thilakarotra, R.	Marketing Officer Mahaweli Development Authority
Weerasinghe, S. P. R.	Deputy Director (Research) Department of Agriculture

Dr. Wanasundara	Department of Animal Products & Health, Ministry of Agriculture, Nuwara Eliya
Wettasinghe, D. T.	Executive Secretary, Sri Lanka Council for Agricultural Research Policy
Wijesinghe, A. A.	Secretary, Ministry of Lands Irrigation and Mahaweli Development
Wanigaratne, Ranjith	ARTI
Dr. Wettasinghe	Head of Agricultural Research Policy
Mr. Walgampaga	Lands Manager Mahaweli Economic Agency
Weerasinghe S. B. R.	Director of Agriculture Ministry of Agriculture

#### **BUSINESSMEN/BANKERS**

Amarasekera, R.	Rothschild Estates, Owner 7 Acres Nawalapitiya
Bathazaar, Wilhelm	Managing Director Pickle Packers (Private) Ltd., Kaduwela
Ballalle, Percival	General Manager Upali Plantations (Pvt) Ltd., Colombo
Ballalle, Percival	General Manager Upali Plantations (Pvt) Ltd., Colombo
Mr. Balasuriya	General Manager, Tropical Foliage
Boddington, William G.	Volunteer Executive, IESC
Desinghe, Dias J.	Director Crossworld Trading (Pvt) Ltd., Colombo
Mr. Dahanayake	Chief, Mawathawewa President of a Society (75 families) Anuradhapura
de Silva, G.M.P.	Director, Rural Credit Central Bank of Sri Lanka

Eswaren, Jeyaras R.	General Manager, Hatton National Bank Nuwara Eliya
Eswaren, Jeywaras R.	Regional Manager, Hatton National Bank
Fernando, Ranjith	General Manager National Development Bank, Colombo
Gunesekera, Sumithra	Managing Director Keels Food Products Ltd., Ja-Ela.
Gunawardene, P.	Wholesaler and Retailer Kandy Central Market
Hettiarachchi, R.	General Manager, Federation of Thrift & Credit Cooperative Society
Harris, M.	Regional Manager, People's Bank Nuwara Eliya
Jayasuriya, Nihal	Plant Manager Ceylon Chocolates Ltd., Colombo
Kumarani, D. M.	Director Credit Policies, Hatton National bank
Mr. Kanapathy	General Manager Kavidas Input Store, Nuwara Eliya
Lugin, R. A.	Youth Scheme, Jaya Lanka Kandapola
Lawrence, Lee St.	Dutch Plantain B. V., The Netherlands
Madanayake, Ranjan	General Manager, Tabasco Industries (Pvt) Ltd., Nugegoda
Mendis, Felix	Assistant Manager Hatton National Bank Ltd., Colombo
Mahinda, E.	Landowner Rothambe Ambagasdona Welimada
Milton, M. D.	Chief Manager, Rural Development Bank Central Bank of Sri Lanka, Nuwara Eliya

Peiris, Nalin T.	Plant Manager (Kist Division) Pure Beverages Co. Ltd., Kaduwela
Perera, M. C.	Regional Manager, Peoples Bank Nuwara Eliya
Podmari, N. A.	Manager, Transport Cooperative of Nuwara Eliya
Prakashpathy, Mr.	District Manager, Bank of Ceylon Nuwara Eliya
Perera, M. C.	Regional Manager, Peoples Bank Nuwara Eliya
Podmari, N. A.	Manager, Transport Cooperative of Nuwara Eliya
Ratwatte, H. Sivali	Chairman Upali Group of Companies, Colombo
Mr. Rathtanayake	Chairman, Rural Development Bank Central Bank, Nuwara Eliya
Mr. Somaratne	Regional Manager, Peoples Bank, Kandy
Mr. Sirimanne	Manager, Ceylon Tobacco Company Kandy
Tissera, Lesley	Rural Credit Department Central Banking, Sri Lanka
Tillekeratne, K.A.	Manager Tropical Foliage & Flower Company
Upali, K.W.D.	National Planning Division
Wyesuriya, A. L.	Assistant General Manager Hatton National Bank Limited, Colombo