ESTABLISHMENT

The Hector Kobbekaduwa Agrarian Research and Training Institute (HARTI) was established in 1972 under the Agrarian Research and Training Institute Act No. 05 of 1972. It functions as a statutory body under the Ministry of Agriculture. It was established mainly for the promotion of policy- oriented research and training needs of the agrarian and rural sector. Being a pioneer of agrarian research in the country, HARTI has a wealth of experience spanning over thirty five years in conducting socio-economic research and training and also providing information for the formulation of agrarian sector development policies since its establishment in 1972.

Mandate

Under the provisions of section 3 (1) of the above Act, the general mandated objectives of the institute are as follows.

i. To foster, assist, encourage and co-operate in agrarian research.
ii. To co-ordinate agrarian research undertaken by government departments, local authorities, public corporations and other institutions.
iii. To carry out investigations and research relating to institutional factors affecting the development of agriculture.
iv. To undertake investigations, research and studies relating to economical use of land for agricultural purposes.
v. To carry out socio-economic research relating to agricultural and rural development.
vi. To provide, undertake or implement training activities and programmes relating to agrarian research either alone or in association with other institutions in Sri Lanka or abroad and to award diplomas, degrees, prizes and distinctions in connection therewith.
vii. To sponsor and hold conferences, seminars, and workshops at local, regional and international levels.
viii. To carry out such research relating to problems of agrarian structure in co-operation with Asian countries in order to serve their regional needs and provide a centre for the collection and dissemination of information on agrarian issues.
ix. To relate such research to problems connected with agrarian development and modernization with special reference to Sri Lanka and other Asian countries in general.

Vision

Be the leader in generating and disseminating knowledge for sustainable agrarian and rural development.

Mission

To strengthen agrarian and rural sector through research and training activities

Goals

i. To be a centre of excellence in socio-economic research and agrarian issues.
ii. To liaise closely with planners and policy makers in the government and with business and research communities.
iii. To make policy formulation and implementation process more effective through knowledge generation and timely dissemination.
iv. To keep the public informed by providing independent assessments on national policy issues.
v. To strengthen the capacity for socio-economic policy analysis by investing in the capacities of its staff and the institute's knowledge base.
vi. To increase the capacity of rural development stakeholders through training.

BOARD OF GOVERNORS - 2013

Mr. Wijerathne Sakalasooriya	Chairman-	-	Secretary, Ministry of Agriculture and Chairman of the Board of Governors until November 2013
Eng. Mr. Udeni Wickramasinghe			Actg. Secretary, Ministry of Agriculture and Chairman of the Board of Governors
Mr. R.M.D.B. Meegasmulla		-	Secretary, Ministry of Agriculture and Chairman of the Board of Governors from 06.12.2013
Mr. Lalith Kantha Jayasekera		-	Director, HARTI until February 2013
Mr. E.M. Abhayaratne		-	Director, HARTI from March 2013
Mr. A.L.A. Asoka Siriwardena	Board Member	-	Addl. Secretary(Admin), Ministry of Agriculture
Mrs. P.M. Shanthi Fernando	-do-	-	Director, Department of Land Use Policy Planning (until June)
Mr. S.D.A.B. Boralassa		-	Addl. Secretary (Lands), Ministry of Lands & Land Development (from August)
Mr. D.C.A. Gunawardena	- do -	-	Director General, Dept. of Census & Statistics (until March)
Ms. Pushpa Wellappili		-	Deputy Secretary to the Treasury, Ministry of Finance & Planning (from April)
Dr. D.S.A. Wijesundara	- do -	-	Director General, Department of National Botanic Gardens
Mr. M.C. Gamage	- do -	-	Director, Ministry of Traditional Industries & Small Enterprises Development
Mr.G.D.W. Jayawardena	- do -	-	Addl. Secretary, Ministry of Plantation Industries
Mr. N.H.M. Chithrananda	- do -	-	Addl. Secretary (Administration & Finance), Ministry of Education (until August)
Dr.(Mrs.) L.W.R. de Alwis		-	Senior Lecturer, Vocational Education Department National Institute of Education (from September)

Mr. D.D. Ariyaratne	- do -	-	Director (Planning), Ministry of Irrigation & Water Resources Management
Mr. J.M. Mangalatissa	- do -	-	Addl. Secretary (Dev. & Planning), Ministry of Co-operative & Internal Trade
Mr. H. Amaratunga	- do -	-	Director, Provincial Offices Monitoring Dept., Central Bank of Sri Lanka
Dr. K. Samarasinghe	-do -	-	Dean, Faculty of Agriculture, University of Peradeniya (until August)
Prof. Ranjith Senaratne		-	Vice Chairman, University Grants Commission (from September)
Mr. K.G. Sriyapala	- do -	-	Director General of Agriculture (until July)
Dr.R.R.A. Wijekoon		-	Director General of Agriculture (from August)
Mr. R.P.R. Rajapaksha	- do -	-	Land Commissioner General
Mr. M.A.S. Weerasinghe	- do -	-	Commissioner General of Agrarian Dev.
Eng. Mrs. Badra Kamaladasa	- do -	-	Director General of Irrigation
Mr.W.H. Karunaratne	- do -	-	Commissioner General of Co-op Dev. & Registrar of Co-op Society
Dr. Premalal Kuruppuarachchi	- do -	-	Asst. Representative (Prog), FAO
Mrs. A.I. Pathirana		-	Actg. Secretary, Board of Governors

MEETINGS OF THE BOARD OF GOVERNORS

	Date of the meeting	No. of members Attended
1.	30 January 2013	13
2.	27 March 2013	10
3.	24 April 2013	13
4.	26 June 2013	15
5.	31 July 2013	10
6.	28 August 2013	09
7.	30 October 2013	16
8.	05 December 2013	13

AUDIT & MANAGEMENT COMMITTEE

1.	Ms. Pushpa Wellappili (Chairperson)	-	Deputy Secretary to the Treasury, Ministry of Finance & Planning
2.	Mr. A.L.A. Asoka Siriwardena (Member)	-	Addl. Secretary(Admin), Ministry of Agriculture
3.	Mrs. P.M. Shanthi Fernando (Member)	-	Director, Department of Land Use Policy Planning (until June 2013)
4.	Mr. M.C. Gamage (Member)	-	Director, Ministry of Traditional Industries & Small Enterprises Development (From November 2013
5.	Mrs. M.I. Pushpa Hemamali (Observer)	-	Audit Superintendent Auditor General's Department
6.	Mr. W.K.L.E. Walallawita (Observer)	-	Chief Internal Auditor, Ministry of Agriculture

MEETINGS OF THE AUDIT & MANAGEMENT COMMITTEE

	Date of the meeting	No. of members Attended
1.	13 March 2013	03
2.	12 June 2013	03
3.	11 November 2013	03
4.	23 December 2013	03

OVERVIEW

Increase in productivity, production and profitability of agricultural products and farm income as well as the food security are the major thrusts of the current agricultural policy of the country, that are outlined in the Mahinda Chinthana policy directives. In achieving these objectives, the role of HARTI is paramount. HARTI is dedicated to conduct research on socio-economic, institutional, cultural and political issues falling within the development of agrarian and rural sector. After conducting research, it disseminates information generated from the research findings and recommendations/ suggestions to programme planners and policy makers to take necessary action to solve those issues. Development of human resources through training of officers, farmers and other stakeholders such as traders, and dissemination of information collected on food commodities from markets are the other functions of the institute.

Upholding its great commitment towards fulfilling HARTI mandate the institute has performed successfully in the same area in the year 2013 as well. This annual report which contains the progress of the HARTI projects in 2013 is the first annual report during my office tenure.

In the year 2013, the number of research studies conducted were 27 and Rs.20.6 million was funded by the Treasury. The studies were based on issues in subject areas such as livestock development, palmyrah as well as kithul industries, microfinance, agro-tourism, fruit and vegetable exports, betel, green gram and cardamom cultivation, tomato as well as spice based oil industries. Considering about the progress of the initiated studies except one, all other studies have achieved 100% progress. About 20 of these studies were requests from the ministries, departments and institutions such as the Ministries of Agriculture, Samurdhi, Small Industries, Irrigation, Export Agricultural Crops and the Presidential Secretariat Office. As these studies were requested based on issues they encountered in performing development work in their respective fields, we can be satisfied that the output of the studies will definitely be gainfully utilized for development.

In addition, two action research studies were also conducted during the year. One was the operation of the second stage of Konakumbukwewa agro-village development model. Under this study, work related to strengthening of revolving funds were performed. The second action research project is also a continuation of an earlier project; experimenting the productive

utilization of kitchen waste of the institute to generate bio-gas to reduce the expenditure of LPG in the canteen.

Human resource development via conducting training programmes to farmers and officers and other stakeholders such as traders also achieved remarkable progress in the year 2013. In all, 6,058 trainers were trained in 82 training programmes conducted in many districts. That was a 28% increase in training programms and 20% increase in the number of trainers compared with the year 2012.

HARTI training programmes provided us an opportunity to exchange our experiences on the agrarian sector with officials in other institutions, in addition to fostering relationships with those institutions. Provincial councils, Department of Export Agricultural Crops, Department of Agrarian Development were among them.

Further, Sharing of country experience on innovative and best practices on rural development with senior officials of the Ministry of Local Government and Cooperatives of Bangladesh was successfully carried out in 2013. In all, 14 Bangladesh officials visited HARTI and the Institute made arrangements to provide them theoretical as well as practical exposure to the successful projects and programmes steered by the Samurdhi Athority, Ministry of Traditional Industries and Small Enterprise Development and Sarvodaya Movement.

During the year, more attention was paid to develop the capabilities of the institute officials. An amount of Rs.1.1 million was spent on this behalf and 46 Officials belonging to both staff and non staff categories received training. This is compared to the previous year that spent Rs. 1.2 Million for the same purpose and trained 108 and 50 staff and non staff members.

As in the previous year, the earnings of the institute also increased in 2013. The earnings in year 2012 was Rs. 23.06 million while it was 25 million in 2013. The ability to draw more customers to utilize seminar/conference related facilities and hostel by proper maintenance was the major reason for this rise in income.

E.M. Abhayaratne
Director

AGRICULTURAL POLICY AND PROJECT EVALUATION DIVISION

1. Reasons for Poor Adoption of Some OFC and Vegetable Seed Varieties of the Department of Agriculture

Research Team: Mr. J.K.M.D. Chandrasiri - Co-ordinator
Ms. Dilupa Bamunuarachchi - Co-researcher

Source of Funding: Consolidated Fund

Scope and Objectives:

This study initiated in year 2012 was completed in March 2013. The major objective of the study was to find the factors for the poor adoption of some of the department developed Other Field Crops (OFC) and vegetable seed varieties such as chilli, maize, capsicum, tomato, brinjal and long bean (*mae)*. The specific objectives were to identify the level of acceptance and adoption of referenced varieties and to examine the socio-economic, institutional and other factors that influenced their adoption. The study was based on an empirical survey of farmers cultivating those crops in Anuradhapura, Puttalam, Kandy, Nuwaraeliya, Badulla, Moneragala and Ampara.

The study findings revealed that farmer's adoption of seeds developed by the Department related to some crops such as maize (Sampath and Badra) and capsicum (Lanka Yellow wax) were completely poor. Some varieties of seeds developed for other crops such as chilli (KA-2 and MI-2), tomato (Thilina), brinjal (Amanda and Hordi lena Eri) and long bean (Polon,Vel Polon and Bushita) were somewhat satisfactory, but the adoption of other varieties beonging into the same crops were completely poor. Those poor varieties were; chilli seeds of Galkiriyagama Varanaya and MI-Green, and Tomato Seeds of Maheshi, Bathiya, Lanka Cheri and Lanka Sour.

The reasons for poor adoption of the referenced seeds were:

i. Lack of awareness and knowledge of the farmers about these seeds
ii. Non availability of quality and sufficient seeds to purchase on time due to insufficient production and improper distribution
iii. Inability of the DOA to assure an attractive service (including extension advice and other input supply) as assured by the private sector
iv. Farmers' greater attraction towards imported hybrid seed varieties with a high yield and income compared to the department varieties and the less favourable characteristics of some of the department seeds, such as susceptibility to pests and diseases.

Recommendations:

i. Farmers should be made more knowledgeable about the DOA seed varieties through training programmes and other methods such as demonstrations.
ii. Advanced seed varieties with better characteristics to compete with imported seeds should be provided and distributed to the Agrarian Development Centres.
iii. Farmers should be given small seed packets as samples to experiment with them as done by seed importing and promoting companies to convince farmers about the new seed varieties.
iv. Paying more attention to develop new seed varieties based on farmers' requirements such as more yield and income

2. Micro Finance Institutions in Sri Lanka; Examination about Different Models to Identify Success Factors

Research Team: Mr. J.K.M.D. Chandrasiri - Co-ordinator
Ms. B.A.D.S. Bamunuarachchi - Co-researcher

Source of Funding: Consolidated funds

Scope and Objectives:

Microfinance has been an approach which is popularized since 1980s to fulfill the credit needs of the poor. The government as well as private sector, especially the NGOs in Sri Lanka, have implemented different microfinance schemes to fulfill the credit needs of the poor. Farmer bank is one such scheme initiated by the government to provide credit and address saving needs of the poor farmers. But, it is not well functioning as expected. Meanwhile, there are well operating microfinance schemes in the country. The study was initiated to learn lessons and guidelines from these well operating microfinance schemes to develop others like farmers bank. The main objective was to study microfinance programmes under different models for identifying more effective organizational arrangements and operational procedures that direct those microfinance institutions to function effectively to achieve their objectives. Under the study, four microfinance schemes belonging to two models were studied. Of them, Janasakthi Bank in Hambantota and Sri Lanka Women's Development Services Cooperative Society Ltd. Belong one model called community banking. The Young Women's Christian Association based Microcredit system in Batticaloa and Farmer Bank credit scheme operating islandwide belong to other known as the centralized banking model.

Findings:

The credit systems belonging to the community banking model seems to be more successful than centralized model due to adopting of successful organizational arrangements, operational procedures, rules and regulations and strategies which are mentioned below.

i. Under the community banking model, bank is very close to the members and often interacts with them so that they see it as their own bank and take collective responsibility to develop it.
ii. Assurance of higher participation of members for outlining of rules and regulations of the credit system, managing it and monitoring its activities have also led to their success.
iii. All activities of the banks are transparent as they are discussed in small groups and in other forums, and accounts are audited by internal as well as external auditors. This has contributed towards winning the trust of its members.
iv. Conducting management activities by a paid staff recruited from among better performed members has allowed them to labour their full time for the development of the bank.
v. Encouraging all the staff of the credit system by getting targets for saving promotions, credit delivery, their recovery and earning profit etc and motivating them by linking their salary increments and promotions with their performance also have an impact on greater performance.
vi. Grading individual members, small groups, village societies and banks based on their performance and providing benefits of the bank (different types of loans and their size) based on performance also have led to higher achievements.
vii. Continuous monitoring of the performances of every aspect of individual bank units and their members, small groups by the staff and different points of the management and taking action to rectify mistakes promptly have resulted in smooth functioning and sustainability.
viii. Expansion of services to a broader area covering insurance as well as other social and cultural services providing much benefits for the people has become a reason for more people's attraction to the bank.

Recommendations:

i. The Farmer Bank has to get more closer to the people as other successful microfinance schemes do. For the purpose, small group members have to be encouraged to involve in group activities that benefit each member of the group. As it is difficult to encourage all farmers who have a tight schedule with agricultural activities female members can be encouraged for that and their consent was checked out in the survey.

ii. Other indicated factors that led to the success of microfinance schemes such as transparency of all activities and financial accounts, taking members participation and giving all benefits and services to members as well as the staff based on their performance etc. should be adopted with regard to Farmers Bank.

3. An Evaluation of Performance of Samurdhi Banks in Poverty Alleviation in Sri Lanka

Research Team: Ms. M.K.N. Damayanthi - Co-ordinator
Ms. P.A.J. Champika - Co-researcher

Source of Funding: Consolidated Fund

Scope and Objectives:

The major objective of the study was to evaluate the performance of the Samurdhi Banks in poverty alleviation and identify issues and difficulties faced by beneficiaries and officers in order to obtain and provide efficient and effective services. The specific objectives were,

i. To assess the strength, weakness, opportunities and threats of Samurdhi Bank societies
ii. To identify the perception of beneficiaries on service delivery by the Samurdhi Banks
iii. To identify issues related to banking habits and empowerment of the poor
iv. To assess the economic and welfare effects of Samurdhi banks

Major Findings:

i. Fifty percent of the bank customers mentioned that they did not experience any difficulty or problem related to Samurdhi Bank or its service. Those who mentioned that they have faced some difficulties, have underlined that delays in providing Samurdhi subsidy (39.7%), lack of information on bank programmes (30.5%), inefficient and ineffective service of the Samurdhi Development officers (24.4%) and insufficiency of the maximum loan amount (6.0%) as reasons.
ii. 13.4% of the customers did not borrow loans during the last five years while 51.1% borrowed 3-10 times.
iii. 40% of the customers revealed that Samurdhi savings/credit helped them to create new employment opportunities
iv. Except 19% of the Samurdhi beneficiary families, others beneficiaries earn over less than Rs 5000 per month.

Recommendations:

i. Should conduct do a grassroot level survey immediately for better targeting
ii. Decision making power should be decentralized where necessary
iii. The Bank should introduce a loan scheme with higher credit ceiling at based on low percentage of required group account balance for customers with a good loan history
iv. The Bank should introduce a new loan schemes for education purposes, youth, differently abled people who are able to earn income and for widows.

4. An Analysis of Socio-Economic Condition of Stakeholders of Palmyrah Industry and their Problems

Research Team: Mr. R.L.N. Jayatissa - Co-ordinator
Mr.Sri Vijendran - Co-researcher

Source of Funding: Consolidated Fund

Scope and Objectives:

Palmyrah tree grows naturally in the North, East and South in Sri Lanka and is not cultivated. According to the past research, three hundred uses can be obtained. from this tree although the society taps very limited benefits from it. Hence, there is a very high potential to utilize Palmyrah to generate products, employment and income for the rural people. Due to the war situation in the North, the Palmyrah industry also collapsed with the end of the war, there is a requirement to re-establish employment avenues for the people' there. For that purpose it is necessary to understand the present situation of the Palmyrah industry and constraints for its development. The main objective of this study was to study the present situation of the industry and find out the hindrances of its redevelopment. The study was conducted in districts of Vavuniya, Killinochchi, Jaffna, Mullaitivu, Mannar and Batticaloa. The major data collection methods were conducting a sample survey of people involved in various Palmyrah based production activities such as sap based products, leave based products and tuber based products. Data were also collected from cooperative societies involved in purchasing, processing and marketing of Palmyrah based products.

Major Findings:

i. Concerning about socio-economic aspects of the Palmyrah sap industry, ethnically 87% of the tappers were Hindu, Tamils and majority live in their own (86%) and permanent houses (70%) built bricks (77%), but 75% had no electricity.
ii. Palmyrah tapping was the main occupation of the majority (over 65%) of tappers in the districts concerned and over 75% of the same people were engaged in agriculture and skilled labour jobs as their secondary occupation.
iii. About 75% of the tappers in all the districts produced toddy from sap to sell to the cooperatives while the cooperatives were involved in making sweet toddy and other by products like jaggary.
iv. In peak seasons, cooperatives cut down the amount purchased by limiting the trees tapped due to inability of selling toddy causing a constraint for the tappers.
v. Illegal liquor products in the area have curtailed the marketing of toddy by cooperatives.

vi. The tappers can earn an attractive income from tapping (Ranging from Rs. 62,000/- to Rs.86,000/- gross income per month), but apparently they do not tend to save these earnings.

vii. Despite the attractive income that can be generated 90% of the tappers' families do not like their young generation's involvement in it due to low social recognition attached to the occupation.

Recommendations:

i. Expand the sale of Palmyrah toddy via banning illegal liquor people production in North, stopping the import of ethanol country, on the nutritious value of Palmyrah toddy, introducing bottled toddy into the estate sector, producing canned toddy and introducing it into modern world and international market etc.

ii. Take action to make sap based products popular among young people via introducing a light mobile instrument to climb the Palmyrah tree and some technologies to produce more sap based products.

iii. Encouraging Palmyrah tappers to save and use the savings for productive purposes through attitude changing training programmes.

5. Present Situation and Future Prospects of the Kithul Industry

Research Team: Ms. Indika Pathirana - Co-ordinator
Ms. M.D. Susila Lurdu - Co-Researcher

Source of Funding: Consolidated Fund

Scope and Objectives:

Kithul is an economically important tree generally spread throughout the country, but especially in low and up country wet zone areas. The government has intervened in numerous ways to promote Kithul as an industry in order to utilize Kithul based resources productively. But, the impact of them seems to have not been to the level of expectation. The major objective of this study was to examine the reasons for not developing Kithul based industries or self-employment avenues despite the government efforts for developing. The specific objectives were'; (i) To examine the socio-economic issues of the people involved in theb Kithul industry; (ii) To identify the type of marketing issues of the industry; (iii) To find out other obstacles faced by the industry. The study was based on a sample survey of the people involved in Kithul based production activities.

The Findings:

i. The government has intervened in establishing Kithul villages (Gammana) and Centers by providing facilities like the technology, instruments and trainings to promote quality Kithul products by utilizing Kithul sap purchased from people in the surrounding areas. But, that programme has been unsuccessful due to the weaknesses of the management in cooperatives to which are responsible for its management, The election of incompetent leaders influenced by politics and their mismanagement of resources have led to this situation.
ii. Large scale private sector producers of Kithul products (like treacle and Jaggery) adulterate by mixing the products with more sugar. Due to this, the quality is degraded greatly affecting the industry adversely.
iii. Though the government has introduced a new technology called "kasper" to tap Kithul flowers, only very limited tappers utilize it (1.31% utilize Kasper method alone while 11.79% utilize both Kasper method and traditional method). One major reason has been the difficulties in understanding the value and application of that method by tappers who the majority are less educated.

Recommendations:

i. Action should be taken to activate all Kithul Centers well by reforming their management with efficient leaders elected democratically by producers and, by providing training and other management guidelines necessary for them in addition to continuous monitoring of their activities.
ii. The quality of Kithul products should be assured by issuing a standardized certificate.
iii. Training programmes on training about "kasper method" should be reorganized in such a way the less educated people can understand and benefit from them.

6. Fruits and Vegetables Export Performance: Export Growth, Instability and Diversification

Research Team: Ms. A.M.S. Perera - Co-ordinator
Ms. M.H.K. Rambodagedara - Co-researcher
Ms. Rasika Wijesinghe - Co-researcher

Source of Funding: Consolidated Fund

Scope and Objectives:

The main purpose of this study is to examine the performance of F&V export sector with special reference to export growth, instability and diversification to identify the issues in order to increase the export revenue.

Major Findings:

i. There are over 20 separate HS cords for fresh vegetables and 21 HS cords for fresh fruit. On the other hand, only three to five product lines contribute to total F&V export earnings covering 80 -85 per cent from top three products lines. This is strongly correlated with higher export earnings volatility. There are over 32 export destinations for fresh fruit and vegetables. However, export markets concentrated on 10 top destinations contribute 90 per cent to the total export earnings. Yet, export markets are rather diversified compared to export products lines.

ii. The study identified pineapple, papaya, avocado, banana and strawberry as potential existing products of which the export quantity should be increase. Vegetables with market potential include salad lettuce, capsicum, broccoli, cauliflower and cucumber, globe artichoke and button mushroom. On the other hand, Maldives, UAE, Kuwait, Qatar and Saudi Arabia are identified as existing potential markets.

iii. The results disclose that in Sri Lanka, F&V sector growth has taken place. Deepening of the existing products and markets highlighting implying the importance of introducing new products lines and destinations to the existing export mix has played an important role.

iv. Lack of quality of the products, unavailability of good quality seed, export supply inconsistency, lack of commercial level farming, supply chain inefficiency and poor linkages between exporters and other stakeholders have been identified as major issues of export diversification of fruit and vegetables.

Recommendations:

The study recommends diversifying F&V export products and markets under following circumstances;

i. Off season specialty: Diversifying the cultivation of crops mix, particularly in the Yala season aiming production of high value cash crops for export through proper irrigation facilities. DOA has so far identified the off seasons fruit producing zones make the product available for at least 9 months. This mechanism should be introduced to the vegetable sector as well. This would lead to improve supply consistence.

ii. Develop the value added industry: This could be done through skill development and technology dissemination especially among young agro industry entrepreneurs.

iii. Enhance the cultivation of high value fruit and vegetables at commercial level: At present, major companies have set up partnerships with foreign investors for the cultivation and export of fruit and vegetables, utilizing large scale farms. Therefore, they should promote cultivation and export of potential fruit and vegetables. DOA needs to develop home garden fruit and vegetable cultivation in a systematic manner. They can

develop a system to cluster small farmer groups and disseminate technology, and provide proper extension and improved seed and planting materials.

iv. Reducing freight charges: Introducing easy flying hours, permitting cargo freighters to fly to capture the potential markets with right collaboration of airlines of Sri Lanka is decisive (Sri Lankan and Mihin Lanka).

v. Linking farmers to the export markets: Introducing forward sale contracts collaborative with the EDB and the Central Bank of Sri Lanka.

vi. Fruit and Vegetable Producers, Processors and Exporters Association's responsibility: Thus active participation of producers in this organization is necessary. The Association should have a long term programme to reduce post harvest losses by investing on cold rooms, developing a technique of out grower system and assuring a good profit margin for growers. They have already prepared proposals and above points can be added to that. They should document predictions of the quality characteristics and quantity they need in future at least for a year. The EDB can play a major role to encourage them to apply these recommendations.

AGRICULTURAL RESOURCES MANAGEMENT DIVISION

COMPLETED STUDIES

1. Present Status and Future Prospects of Spice Based Oil Industry in Sri Lanka: The Case of Cinnamon Leaf Oil and Citronella Oil Industries

Research Team: Mr. S. Epasinghe - Co-ordinator
Ms. Renuka Weerakoddy - Co-researcher
Ms. Susila Lurdu - Co-researcher

Source of Funding: Consolidated Fund

Scope and Objectives:

The main focus of this study was to investigate the gradual collapse of spice based oil industry in Sri Lanka with special reference to cinnamon leaf oil and citronella oil industries with a view to make recommendations needed to uplift the spice based oil industry in the future.

Findings:

Cinnamon Oil Industry:

Entrepreneurs provide their contribution to the Cinnamon leaf oil industry in different ways. The majority of entrepreneurs in the Galle district (45%) extract oil from the leaves collected from their own plantations and purchased from others with the use of their own distillation plants. In the Matara district, the majority (49%) find the leaves in the same way but they use distillation plants on hired basis for which half a bottle of oil/distillation in turn is given to plant owners. (2) The Cinnamon leaf oil industry was a highly profitable venture in the Galle district which operated with the use of stainless steel distillation plants known as 'Meetiyagoda technology'. The percentage that owned distillation plants was 81 percent. The use of Meetiyagoda technology among them amounted to 94 percent. The Oil productivity was five bottles/distillation a turn. Accordingly, a higher price was offered for the cinnamon leaves (Rs. 80000-100000/ac). (3). The percentage of distillation plant owners in the Matara district was 30 percent. The use of stainless steel plants among them was at a lower rate (61%). The amount of oil extracted from a distillation turn amounted to 3.5 bottles. In the Matara district, a favourable soil and climatic conditions for cinnamon cultivation does not prevail as in the Galle district.

Moreover, there was a less demand for cinnamon leaves (Rs. 2000-4000/ac). (4). Most of the entrepreneurs in Galle (42%) and Matara (44%) districts store cinnamon leaves outside the stores due to inadequacy of storage facilities. This adversely affected the quality and quantity of the oil extracted from those leaves.

Citronella Oil Industry:

The citronella oil industry in Ratnapura and Hambantota districts is not operating at a competitive level. Even though the number of entrepreneurs was 29 percent, the percentage of distillation plant owners was low (16%). Other citronella growers had used distillation plants on a hired basis and $1/6^{th}$ of a bottle of oil/distillation turn is given to the plant owner as plant charges. (2) It was observed that there was no trend of establishing new plantations in the study locations whereas the existing plantations are being subject to gradual degradation. Growers in the Ratnapura district were replacing their citronella plantations with pepper under the direction of the Department of Export Crops. (3) Inadequate storage facilities had constrained storing of sufficient quantity of leaves during the harvesting season affecting both the quality and quantity of oil due to unnecessary wetting, drying and pest damages of leaves as a result of being stored in open areas. (4) Traditional technology was commonly used in the citronella industry. The use of Meetiyagoda technology is at a minimal level (2% in Hambantota, 9% in Ratnapura).

Recommendations:

i. Documentation of the available land extent under cinnamon and citronella, providing incentives to organised grower groups and regular implementation of government support program for some spice crops.
ii. Standardise oil distillation industrial units, supervision and take steps for quality control.
iii. Capacity building of entrepreneurs by providing storage facilities to derive benefits from price fluctuations.
iv. Training of new entrepreneurs on value added products targeting export markets and directing them to commence such industries.
v. Take steps to minimize the monopolistic nature in the spice oil industry by the Department of Export Crops Development and the Export Promotion Board in order to ensure new entrepreneurs entering the industry.

2. Identification of Potentials and Constraints for Promoting Indigenous Yams as a Subsidiary Food Crop.

Research Team: Mr. S. Epasinghe - Co-ordinator
Ms. Renuka Weerakoddy - Co-researcher
Ms. Sagarika Hitihamu - Co-researcher

Source of Funding: Consolidated Fund

Scope and Objectives:

The main focus of this study was to identify the potentials and constraints for promoting indigenous yams as subsidiary food crops through assessing the socio-economic status of farmers involved in yams cultivation.

Findings:

i. The majority of farmers (82%) were 45 years of age and 72 percent of growers had grown yams only for consumption. Involvement of young farmers in the cultivation of yams at least for consumption purposes was rare.

ii. The majority (52%) had used planting material saved from previous cultivations and another 18 percent farmers had purchased planting materials whereas the rest had exchanged material among themselves. This establishes that, the use of improved planting material for yams cultivation is rare. Yield level of most types of yams too were at a very low level.

iii. Except for the limited intervention through 'Divineguma' programme to provide planting material to five percent farmers, there were no attempts to improve knowledge and skills or any support programmes for farmers involved in yams cultivation.

iv. Eating yams for breakfast (63%) and lunch (46%) was peculiar to consumption pattern of yams while, only two percent added yams to dinner. Attitudes prevailing among people on the consumption of yams and availability of potatoes at a lower price than yams had constrained the increase of consumption of yams.

v. Given this background, it is proven that there was no increased interest among farmers to grow yams and those who had done it were traditional farmers who did it as a practice but at

a subsistence level. Further, out of 94 yams varieties most varieties have been identified as being subject to extinction. Consumers do not like to consume some yams varieties due to lack of knowledge about such yams varieties. The traditional knowledge pertaining to value added products of yams is gradually fading. Therefore, there is a strong need to popularize the consumption of yams among the people.

vi. The private and the state sector organizations functioning in the Kegalle district are attempting to popularize the cultivation of yams among the farmer community. The seed bank system implemented by these organizations seems to be a timely strategy to boost yams cultivation in the country.

Recommendations:

i. In order to popularize the cultivation of yams among farmers and to prevent extinction;
   - Educate and encourage farmers to grow yams available in the respective areas through the establishment of demonstration farms at the agrarian services centres.
   - Establishment of a demonstration home garden in each village and developing it as a seed bank by introducing seed bank system through collaborative action between private and state sector organizations.

ii. Introduce high yielding yams varieties to the farmers by conducting research.

iii. Publicity programmes to educate the general public and especially school children on medicinal l and nutritional values of yams.

iv. Documentation of traditional knowledge on value added products of yams and popularizing these products among the people.

v. Educate on opportunities at export market to encourage exporters.

3. Permanent Crop Clinic Programme: An Evaluation.

Research Team: Ms. Sharmini K. Kumara - Co-ordinator
Ms. Renuka Weerakoddy - Co-researcher

Source of Funding: Consolidated Fund

Scope and Objectives:

The concept of Crop Clinics (CCs) invented by the Centre for Agricultural Bioscience International was introduced to Sri Lanka in 2010 by the Department of Agriculture. This study was conducted in Matara, Matale and Trincomalee districts to investigate the success of CCs as an extension tool.

Findings:

i. Complying with the initial objectives of crop clinic programme, it had placed its priority (90%) on solving pest and disease problems relating to crop production.
ii. These CCs had demonstrated its importance as an extension tool in several terms; as a demand driven group learning process; a knowledge sharing event among farmers with diverse experience and knowledge; two way communication process where both farmers and extension personnel of higher ranks (SMOs and representatives from plant protection centre and research stations) are met.
iii. The present crop clinic programme comprises of several weaknesses which require changes in timing, way of organizing, use of teaching aids and equipment and knowledge of plant doctors.
iv. Overall crop clinics could be recognized as a valuable attempt to communicate the message on integrated pest management that prioritizes environmental friendly means of pest control with chemical use as the final alternative.
v. However, only small scale farmers and home gardeners had practically benefited through CCs. Commercial scale cultivators seek quick results in order to minimize crop losses. Therefore, they had prioritized chemical pest control which is the ultimate recommendation in crop clinics.

Recommendations:

i. Accordingly, the CC programme requires following two different approaches for two domains; one for small scale farmers/homegardens and the other for commercial farmers.
ii. Continue the CC programme targeting homegardening and small scale farming with required changes in timing, using pest diagnostic equipment and teaching aids for explanation,

utilizing expert knowledge available with the department and with changes in the way of organizing crop clinics.

iii. Provide training to the commercial farmer groups on how to derive best results from practical application of integrated pest management by establishing demonstration farms for mainly grown crops in different locations.

4. Analysis of Peri-urban Dairy Production Industry in Seethawaka Area

Research Team: Ms. Sagarika Hitihamu - Co-ordinator
Ms. Susila Lurdu - Co-researcher

Source of Funding: Consolidated Fund

Scope and Objectives:

The key objective of this study was to characterize peri-urban dairy production system in Seethawaka Area with a view to make recommendations to uplift the same.

Findings:

i. Some prominent characteristics of the dairy farming system in Seethawaka area were as follows; 43 percent sample farmers had chosen it as their main income generating activity and the rest as a secondary source of income; average herd size was five animals; practicing three types of management systems including semi intensive system (68%), extensive system (25%) and intensive system (7%).

ii. Jersey was the dominant breed type (66%) and Frisian crosses were found to be the second most popular (15%) breed type in the area. The average milk production of Jersey breed was 8.3 l/day and the maximum production is 15 l/day. Frisian breed had recorded an average production of 6.41 l/day with the maximum production recorded as 17 l/day.

iii. Buffalo farmers represented 20 percent of the sample with a majority (38%) from Padukka VS range. The famous breed types were Murrah and Nilliravi and their average production was 10 and 8 l/day respectively. Buffalo farming was found to be a low cost, convenient and high profit earning venture that does not require concentrate feeding or control of ticks and worms.

iv. Use of artificial insemination (AI) had become popular among 51% farmers and it was widely used by the farmers in Homagama VS range. The study revealed that there is a need of two AIs for a conception.

v. Around 87 percent farmers had sold fresh milk and the rest (13%) was involved in value addition with minimum facilities. Milco was the predominant milk collector (35%) in the area. Fonterra, Co-operative Society, Sucky and Milky were among other dominant milk collectors. Average price prevailed in the area was Rs. 49.00/l.

vi. Excluding the cost of family labour, the average cost of production of milk was estimated at Rs.28.00/l. When the opportunity cost of labour was included, milk production cost increases to Rs.43.00/l. The average estimated cost of maintenance was Rs. 136.70/cow/day. With family labour it goes up to Rs. 219.00/cow/day.

vii. The dairy production industry in the Seethawaka area was constrained due to several factors. Among those were inadequate extension officers to provide satisfactory services to the farmers, high cost of concentrate feed, lack of natural grazing lands, scarcity of high milk producing breeds, less subsidies, theft of animals and inadequate breeding facilities.

Recommendations:

i. Designing a programme to introduce low cost high quality concentrate feed. Direct and assist entrepreneurs to make available such feed at village level or at milk collecting centres.

ii. Design and implement a specific integrated security programme with the participation of farmers and police officials in the areas reporting theft of animals.

iii. Establishment of private breeding farms with the intervention of the government to obtain high milk producing animals by farmers with an assurance of the government.

iv. Organize field days and training programmes to educate farmers on several important aspects in milk production such as clean milk production, correct feeding, breeding and maintenance of cattle sheds.

v. Popularize buffalo farming among farmers and direct them to involve in buffalo farming through support programmes.

vi. Train special groups on animal production and employ them as cadre of officers in the extension service is not adequate.

5. Socio Economic Evaluation of Dairy Industry in Mahaweli Area and Potential for Expansion

Research Team: Ms. Sagarika Hitihamu - Co-ordinator
Mr. S. Epasinghe - Co-researcher

Source of Funding: Consolidated Fund

The main aim of this research was to analyse the dairy industry in the Mahaweli system and explore future potential for further expansion of the dairy industry in the area.

Findings:

i. Eighty percent of the dairy farmers belonged to middle age group (40-45 years) and 80% of the farmers have studied upto grade 8-10. The total average milk income per month varied from Rs. 10,000-15,000. Thus, most of the dairy farmers were from a group representing low socio-economic status.

ii. The dairy production system was characterized by; 30% feeding animals with concentrate feed, 65% farmers practising semi intensive system, 18% farmers practising extensive system and the rest 7% practising intensive system.

iii. Jersey Sahiwal cross was the most dominant breed type (80%) in the Mahaweli H System. The average milk production was 6.7 l/day with the maximum production of 12 l/day. The sample was also represented by 2% buffalo farmers from the Nochchiyagama area.

iv. Sixty two percent of the farmers utilized artificial insemination for breeding and the rest allowed natural breeding. A private AI technician in Nochchiyagama had facilitated AI service, however, the success rate was 2-3 AIs/pregnancy.

v. Milk marketing channel operating in the area appeared well organized where Milco played the dominant role. Nestle had collected milk from 34% farmers while CIC predominated in Tabuthegama area. Value addition to fresh milk was uncommon except for a few farmers in Nochchiyagama.

vi. The average milk production cost amounted to Rs.36.62/l and the estimated maintenance cost was Rs. 104.83/cow/day. The average price was Rs. 48.00/l.

vii. The key constraints observed in the dairy production system in the Mahaweli H area were; poor hygienic conditions in the entire milk production process due to scarcity of water for

cleaning animals, less use of concentrates to feed animals due to high cost, lack of natural grass lands for grazing of animals and poor affordability of farmers to practice intensive management systems.

Recommendations:

i. Facilitate pasture establishment (CO-3) in reserved forests on temporary basis only for feeding animals.
ii. Provide training and financial support to young entrepreneurs to establish breeding farms to ensure purchase of high yielding breeds by the farmers from trustworthy sources.
iii. Ensue availability of concentrate feeds at subsidized prices or provide training and financial support to initiate local feed mills at regional level and to design distribution channels.
iv. Train entrepreneurs and make financial assistance available to them in order to distribute low cost and high quality concentrate feed at local level.
v. Conduct training programmes and implement field days in order to increase knowledge and skills on clean milk production, maintaining proper hygienic conditions, feeding and breeding aiming at increased quality and quantity of milk production.
vi. Facilitate and provide financial support to the farmers who wish to be involved in value addition of fresh milk and to further develop already available industries.

6. Viability of Protected Agriculture for Vegetable Farming in Sri Lanka

Research Team: Ms. Sharmini K. Kumara - Co-ordinator
Ms. Renuka Weerakkody - Co-researcher

Source of Funding: Consolidated Fund

Scope and Objectives:

Protected agriculture (PA) is often explained as cultivation of crops under a protective cover for various reasons. The impetus of production of vegetables under protective covers gained ground in Sri Lanka for several reasons; to ensure a sustained supply of vegetables against seasonality of production, increase farmers' income that is lower due to erratic weather conditions and pest problems, encourage farmers to involve in agriculture in scare land and labour conditions promote modern technology as a means of crop diversification and attract youth to the

agriculture sector. This study attempted to characterise the vegetable farming under protective covers in terms of above aspects while understanding issues and constraints faced by the farmers.

Findings:

i. The study reveals that in Sri Lanka, farmers use three types of protective covers for vegetable production: poly tunnels (48%), net houses (27%) and rain shelters (25%).
ii. A majority of PA farmers in the districts of Nuwaraeliya, Badulla and Kandy grow bell pepper and Japanese cucumber in poly tunnels. But, the level of adoption of advanced technologies for irrigation, pest control, and growth media are still at a very basic level, for instance, drip and sprinkler irrigation systems were used by 8% farmers and the rest used manual methods.
iii. Though the initial investment is high, farmers operate poly tunnels for the production of bell pepper and Japanese cucumber on a sustained basis as it has proved to be financially profitable. Due to competition from other Asian countries, Sri Lanka's share in the export of these vegetables could in future be reduced, thus, may affect the expansion of poly tunnels for these crops.
iv. Production of tomatoes, zucchini, cabbage varieties and salad leaves have also proved to be financially profitable in poly tunnels. Fluctuations in demand and price in the local market has resulted in the discontinuation of operation at times.
v. Success stories show that highly mechanized, highly productive, diversified systems with an assured export market are among the factors contributing to successful operation of poly tunnels.
vi. Promoted as a means to overcome erratic weather conditions, rain shelters have proved to be a highly profitable venture in the Matale district specifically for onion seed production. With demand out stripping the supply of onion seeds in the local market, there is a huge potential for expanding rain shelters but the high cost of establishment is a constraint.
vii. Net houses have been promoted under the Divi Neguma program in the Kandy district as a means of self employment in plant nursery and vegetable cultivation. While plant nursery has proved to be unprofitable, cultivation of certain vegetables, especially local tomatoes has shown to be profitable.

Recommendations:

i. In addition to providing subsidies for the construction of poly tunnels it is essential to improve the knowledge and skills of farmers on crop diversification, minimise pesticide use, and promote the use of advanced technologies and to find niche markets to promote crop production in poly tunnels. Therefore it is required to provide a package of services including and trainings to enable the farmers to fulfill the bove things. This can be done through state sponsored programmes such as 'Divi neguma' on pilot basis to attract youth aw well.

ii. To capture the full potential of onion seed production subsidies should be provided for rain shelters.

iii. Subsidies should be provided for net houses with the directions for farmers to operate them for the off season vegetable production.

7. Socio-economic Factors Affecting the Productivity of Green Gram

Research Team:
Ms. Rasika Wijesinghe - Co-ordinator
Mr. Prasanna Wijesinghe - Co-researcher
Ms. A M S Perera - Co-researcher

Source of Funding: Consolidated Fund

Scope and Objectives:

This study attempted to identify socio-economic factors affecting the productivity of green gram with a view to propose possible means of increasing the productivity.

Findings:

i. It was revealed from the study that the estimated average yield of green gram was 190kg/ac. Compared to the mean value of the potential yield (648kg/ac) the percentage of yield gap was 71%. It was 61 percent when compared to the lower limit of the potential yield (486kg/ac).

ii. Estimated relationship between the productivity and socio-economic factors of green gram producers established that the use of recommended varieties, seed rate, extent under cultivation and the degree of using hired labour have positive and significant relationships with the productivity of green gram in the descending order in terms of significance. Of the

sample, 59 percent farmers had cultivated recommend green gram varieties such as MI 5 and MI 6.

iii. Seed rate is an important factor for increasing the productivity of green gram. The maximum level of productivity was demonstrated at the seed rate of 12kg/ac. Further, the increase in seed rate had shown a decrease in productivity attributing to increased plant density that constrain weeding and stimulates rapid spread of pests and diseases.

iv. The land factor which denoted a positive relationship demonstrated that the productivity increased up to two acres and dropped with further increase in extent. This means that two acres is the maximum manageable extent of land by an individual farmer with the available resources, mainly the labour resource.

v. An important aspect of green gram cultivation is revealed through the positive relationship between the access to hired labour and the productivity.

vi. As expected, there was no observable relationship between fertilizer use and productivity as most of the farmers had neither used fertilizer in green gram cultivation nor complied with recommendations. In general, green gram cultivation in Sri Lanka is characterized by a low external input subsistence farming system.

vii. Green gram farmers in Sri Lanka sell their produce soon after the harvest due to lack of proper storage facilities. However good prices do not prevail during the harvesting season and therefore green gram cultivation remains at subsistence level with low productivity. Therefore it is required to take steps to convert the green gram farming system with subsistence nature into a optimal external input farming system that achieves high productivity.

Recommendations:

i. Since the extent of land available is invariable and most of the farmers are not using fertilizer, they should be encouraged to use fertilizer in order to achieve high productivity.

ii. As green gram is a more labour intensive crop, it is essential to develop a variety which allows mechanized operations, specially labour consuming operations such as harvesting and weeding and introduce low cost machinery.

iii. The government should improve the current methods of gathering and dissemination of information and increase its current level of extension services to provide better awareness

on proper cultural practices, control of pest and diseases and about changing rainfall pattern to avoid crop damages which reduce both the quality and the quantity of the output.

iv. The current scenario surrounding the low green gram productivity in Sri Lanka is attributed to subsistence nature of farming that resulted due to low prices prevailing during the harvesting season and lack of storage facilities to store the products until the prices increase. Therefore, policies should be formulated to promote investment on value addition that would offer high prices for green gram, to encourage forward sales contracts with the participation of the private sector and to assist improving storage facilities.

ON-GOING STUDIES

1. **Economies of Scale and Technical Efficiency of Paddy Farming in Low Country Wet Zone**

Research Team: Mr. I. P. P. M. Wijesinghe - Co-ordinator
Ms. R. D. Wijesinghe - Co-researcher

Source of Funding: Consolidated Fund

Scope and Objectives:

This study focuses on estimating technical efficiency of paddy farming in the Low country Wet Zone (LCWZ) and identifies socio economic factors that affect the technical efficiency.

Specific objectives are;

i. To estimate the technical efficiency of paddy farming in the LCWZ.
ii. To estimate the level of returns to scale (economies of scale) in the region.
iii. To identify socio-economic factors that affect efficiency of paddy farming in the LCWZ.
iv. To derive policy recommendations for improving the efficiency of resource use in paddy farming in the LCWZ.

The study is based on the sample survey. Primary data was collected in Colombo, Gampaha, Kalutara,Ratnapura, Galle and Matara districts in the LCWZ. Four hundred and ninety five farmers were interviewed.

Current Progress:

Data analysis is completed. Report writing is in progress.

ENVIRONMENT AND WATER RESOURCES MANAGEMENT DIVISION

COMPLETED STUDIES

1. Alternative Approaches for Small Tank/Cascade Rehabilitation: Socio-economic and Institutional Perspective

Research Team **:** Mr. M.M.M. Aheeyar - Co-ordinator

Source of Funding **:** Consolidated Fund

Scope and Objectives:

The main objectives of the study were to study the different approaches adopted by different NGOs in rehabilitating small cascade systems in order to draw lessons from these models to propose recommendation for future interventions.

Findings:

i. The participatory development approach had addressed the real needs of rural people and had made them strong partners in project implementation.
ii. Absence of integration between software and hardware aspects of development from the early stages of the project would weaken the entire mobilization process and post project maintenance of the schemes.
iii. Total dependency on the line agency for project implementation had caused delays in achieving targets within the specified time period.
iv. Absence of clear roles and responsibilities for the line agency during the rehabilitation process has created difficulties in mobilizing officers towards post project scheme related activities and establishing sufficient link between farmers and the line agency officers.
v. Appointment of caretaker/*Jalapalaka* and collection of "salaries" had effectively re-established the traditional O&M arrangement.

Recommendations:

i. Selection of tanks for rehabilitation should be based on the need of the beneficiaries and their willingness to participate actively and contribute their maximum for the proposed rehabilitation.
ii. The development formula of the rehabilitation project must provide more weight to social mobilization, capacity building and empowerment of the communities and community institutions by providing guidance, skills and knowledge required for their effective functioning.
iii. Rehabilitation projects have to adopt suitable methodology to provide early orientation and consultation for all stakeholders on project approach and roles and responsibilities of line agencies during the project and also during the post project period.
iv. There should be a role and room for the involvement of line agency officers in project

activities considering their input required for the scheme after the withdrawal of external interventions, but without hampering the project targets.

v. The rehabilitation projects must allocate funds for the land survey at scheme level and to make demarcations for reservation areas and other environmental components with the consent of beneficiaries.

2. Production of Compost from Municipal Solid Wastes (MSW): Potentials and Constraints

Research Team: Ms. G.G.de.L.W. Samarasinha - Co-ordintor
Mr. M.A.C.S. Bandara - Co-researcher

Source of Funding: Consolidated Funds

Scope and Objectives:

The major objective of the study was to investigate the potentials and constraints of composting municipal solid wastes at local authority level and to draw lessons to promote technology.

Findings:

i. Success of MSW composting projects was largely observed with high level of political and managerial commitment towards project activities.

ii. MSW composting plants do not produce compost to their full capacity as marketing avenues are currently limited for the compost produced from MSW.

iii. Investment for waste management via composting has generated financially positive results. The investment can be earned within 9 to 10 years period of the project.

Recommendations:

i. The Government should make policy changes to make composting of MSW operate as a complete package that assures systematic collection of sorted wastes, purchasing of recyclable wastes, and implementation of legislations to reduce waste generation and improve the quality.

ii. Public awareness programmes regarding the importance of separating degradable and non degradable items at household level should be strengthened.

iii. Government intervention is necessary in obtaining collaborative supports of all stakeholders including producers, agricultural experts and users to improve the quality of MSW compost as a means of soil amendment as well as a nutrient supplement.

iv. Government assistance is necessary to monitor the quality of MSW compost regularly and to create an assurance among the users regarding the quality of the product.

3. Impacts and Lessons of Uda Walawe Left Bank Upgrading and Extension Project for Water Resources Management

Research Team: Mr. M.M.M. Aheeyar - Co-ordinator
Mr. H.J.C. Jayasuriya - Co-researcher

Source of Funding: Consolidated fund

Scope and Objectives:

The major objective of the research is to evaluate the new hardware and software components adopted for WLBP for irrigation rehabilitation, crop diversification and institutional strengthening.

Findings:

i. Construction of high tank and low tank system under the cascade concept and construction of dual canal system were successful interventions for 70-80 of farmers and have helped to re use the water and improve water use efficiency.
ii. The project has succeeded in reducing water duty and increasing the extent of cultivation through reduction of water losses, changing farmer attitudes and crop diversification.
iii. 'Parachute' method of paddy cultivation has helped to improve the yield and reduce the water use, but the majority of the farmers are not willing to practise the technique due to high labour requirement and need of skilled labour
iv. About 40% and 20% of low land paddy farmers and highland non paddy crop farmers had received perennial fruit crops to cultivate under irrigation. Almost all the plants supplied had survived for 40%-70 % of the farmers.
v. Agricultural produce marketing centres were not successful and only 10 % of the farmers had ever utilized the centres, while regular users were limited to four percent.
vi. The project was able to double the farm income of the 70 % of the farmers in the area.
vii. The most serious problem affecting the livelihoods and income earning of the people is damage to crops and assets caused by wild elephants and stray cattle.

Recommendations:

i. The reduction of conveyance losses and reuse of water through enhancing thecapacity of storage system, concrete lining of distributory canal system and introducing filed level dual canal system are recommended to improve the irrigation system performance.
ii. Systematic training and awareness creation to change the attitude and perceptions of the farmers to shift from paddy mono crop to non paddy crop cultivation with strengthening of local level organizations, extension support, demonstration and provision of subsidies have produced good results in the Walawe scheme.
iii. As the soil salinity has been developed in some of the newly developed areas, it is important to provide sufficient drainage system in the newly developed area and educate the farmers on the ways and means to overcome the effects of soil salinity.

iv. It is important to institutionalize the operation and maintenance system at FO level through mobilization of sufficient resources from farmers routinely and procedures to utilize the resources.
v. The project should carryout more advocacies on the lessons and experiences to wards the of commercialization of irrigated agriculture and climate change adaptation.

4. Application of Integrated Pest Management (IPM) Practices in Vegetable Cultivation; Past Experiences and Suggestions for Promotion

Research Team: Mr. H.J.C.Jayasooriya - Co-ordinator
Mr. M.M.M.Aheeyar - Co researcher

Source of Funding: Consolidated fund

Scope and Objectives:

The study was conducted to find out the factors influencing the low adoption of IPM in vegetable cultivation and draw recommendations to promote the use of IPM in vegetable cultivation.

Findings:

i. About 53% of farmers did not have any contact with the extension staff during cropping seasons and some farmers were not willing to take advice from extension officers.
ii. The IPM practice was not familiar to 56 percent of farmers. The farmers who had heard about IPM, only 21% was knowledgeable about the technique of IPM.
iii. Though the level of awareness on IPM as a technique was low, the majority of farmers (70-90%) were unintentionally used to practice various principles of IPM such as destruction of crop residues in the field, soil treatments, non-chemical weed management and crop rotation. However, non-chemical pest management, mix cropping, protecting natural enemies of pests, using traps and baits and correct management of inorganic fertilizer were poorly adopted.
iv. Out of the farmers who practised IPM principles, 70-80% have followed those 'without proper understanding' of the principles
v. The level of IPM adoption was positively related to the knowledge of farmers on IPM and the amount of income received to the total household income from vegetable cultivation. A number of family labour had negatively influenced the IPM adoption.
vi. Gaps in existing policy and institutional set up, poor attitudes of farmers and officers on IPM, weak extension system, complicated practices involved in IPM technology were the major factors behind the low level of adoption of IPM in the vegetable sector.

Recommendations:

i. IPM should be taken as one of the priority policies of pest management at national and provincial level through initiating measures to promote and popularize among farmers by allocating sufficient resources and building capacities of the officers.

ii. Tailor-made IPM training programmes should be developed and conducted for IPM trainers (SMOs) and the extension officers working at the field level (AIs and AOs).
iii. Awareness campaign should be launched using mass media to motivate vegetable consumers to identify and purchase 'pesticide free vegetable products'.
iv. Conduct 'participatory vegetable IPM trials' in major vegetable growing districts, (as pilot programmes) to motivate farmers toward IPM.
v. Develop ARPA's as the messengers between farmers and AIs to promote IPM.
vi. Create a special price and market for IPM based vegetable products by providing IPM certification similar to organic products.
vii. Develop simplified and specific IPM packages for major pest and diseases of vegetables and popularize among the farmers.

5. Agro-tourism Development in Sri Lanka: Opportunities and Challenges

Research Team:	Ms. M.H.K. Rambodagedara	-	Co-ordinator
	Mr. D.A.C.S. Silva	-	Co-researcher
	Ms. A.M.S. Perera	-	Co-researcher

Source of Funding: Consolidated Fund

Scoop and Objectives:

Major purpose of this study was to identify the opportunities and challenges to develop agro-tourism as a source of supplementary income for farming community.

Major Findings:

i. Though agriculture and tourism sectors have well established in the study area, agro-tourism practices have not been widespread among farming community. Only a few farmers were engaged in agro-tourism activities involvement of the majority was marginal.
ii. Farmers who carried out agro-tourism as a regular practice have established direct linkages with tourism organizations indicating the importance of proper linkages in this endeavor.
iii. The present agro-tourism activities conducted by the farmer community were less diversified, despite the possibility of having a range of agro tourism activities to broaden the income generation avenues.
iv. Diversified agricultural activities, natural attractiveness together with idyllic rural setting, farmers' willingness, availability of labour and time were identified as common opportunities to develop agro-tourism.
v. The major challenges in the sector are lack of linkages, lack of awareness, training & guidance on agro-tourism, absence of policy level initiatives, financial constraints, unavailability of stable market, limited value added products, poor infrastructure facilities, inadequate sanitary facilities, no guarantee on protection and safety of the tourists.
vi. In the current context, activities link with traditional & unique farming practices and rural culture, authentic foods, accommodation and direct and indirect sales of fresh and value added products were among the most potential agro-tourism activities.

Recommendations:

i. It is recommended to carry out specific agro-tourism initiatives together with national agriculture and tourism development programs such as tourism zones, agricultural model village and fruit villages programs as a collaborative effort with relevant stakeholders.
ii. Public-private partnerships are necessary to facilitate the selected farmers, farmer organizations and existing agro-tourism operators through awareness & training, financial assistance, infrastructure development and establishment of linkages with the tourism sector.
iii. It is vital to provide greater publicity on agro-tourism activities with the vigorous involvement of Sri Lanka Tourism Promotion Bureau.
iv. It is important to formulate agro-tourism standards and guidelines considering country specific situations and international agro-tourism standards in order to establish high quality and reliable agro-tourism operations. There should be assurance for safe and accessible environment for agro-tourism especially focusing on food security, sanitary facilities and site safety with the proposed standards and guidelines.

6. Cardamom Cultivation in Knuckles Conservation Forest: Socio-economic and Environmental Perspectives

Research Team: Ms. J.A.U.P Jayasighe - Co-ordinator
Ms. R.M.M.H.K Rambodagedara - Co-researcher

Source of Funding: Consolidated Fund

Scope and objectives:

The study intends to identify the impact of prohibition of Cardamom cultivation in the Knuckles conservation forest (KCF) on the livelihood of cultivators and examine the environmental consequences of cardamom cultivation in the area.

Major findings:

i. Cardamom cultivation in the Kalupahana area of KCF was the primary source of income for the majority of cardamom cultivators before banning the cultivation.
ii. The farmers have moved to alternative income generating sources. The mean household income has reduced significantly due to the shift, causing a number of negative socioeconomic impacts.
iii. The research confirms that cardamom cultivation has altered the forest structure, canopy openness, species composition, soil properties, watershed properties and natural regeneration and evolution processes of KCF which will cause numerous negative environmental consequences.
iv. Alterations of the properties of KCF which cause undesirable modifications to the ecosystem namely the reduction of water quality, depletion of genetic resources, increased soil erosion, changes in hydrology, climate and natural regeneration and evolution processes. This also negatively impacted on cardamom productivity and crop sustainability.

Recommendations:

i. A deliberate holistic and multi dimensional approach should be adopted to recover the income loss of cultivators by creating alternative sustainable income sources. Consideration should be made on people's willingness, appropriateness to area and long term sustainability of these methods.
   a. Providing state owned forests and village forests to cultivators under the guidance of local government authorities and Forest Department for commercial pepper cultivation whilst providing initial financial and technical assistance until the first yield is harvested.
   b. Providing financial and technological assistance for the identified people to develop self employment
   c. Implementing a long term programme to engage villagers in the tourism industry, specially the young generation.

ii. Encourage people to under plant cardamom in forest plantations such as Pinus under the guidance of Forest Department in potential areas such as Thangappuwa. Initial financial and technological support should be provided with the guidance of Department of Export Agriculture.

iii. Natural regeneration should be allowed in cardamom planted forests in KCF without disturbing the forest. Continuous monitoring should undertake to observe the regeneration process and the Forest Department should intervene where assisted natural regeneration is required.

7. Livelihood Improvement of Rural Farming Community: Case of Upper Watershed Management Project (UWMP)

Research Team: Ms. G.G.de.L.W. Samarasinha - Co-ordinator
Mr. M.A.C.S. Bandara - Co-researcher

Source of Funding: Consolidated Fund

Scope and Objectives:

UWMP was the first project that addressed watershed issues directly and in a holistic manner and it was taking most of the current approaches to watershed management. The primary objective of the research was to study the project's achievements on improving the standards of living of the respective farmer community while protecting the watershed areas.

Major Findings:

i. About 90 percent of the beneficiaries have adopted soil conservation measures, mainly the establishment of physical soil conservation structures in their respective lands with the material and technical assistance given by the project.

ii. Adoption of conservation farming techniques is poor among the beneficiary farmers.

iii. Other income generating avenues introduced by the project have not contributed sufficiently to improve the household income of beneficiary farmers.

Recommendations:

i. It is recommended to conduct training programmes to emphasiize the importance of adopting conservation farming techniques and using vegetative soil conservation measures to facilitate extra income generation at household level.
ii. As per the ongoing livelihood development programmes, it is proposed to provide an allocation to relevant implementing agencies of UWMP to assist beneficiary farmers to overcome the constraints they experienced in other income generating activities.

8. Assessment of Government Accelerated Tank De-silting Programme Conducted in Late 2012

Research Team : Mr. M.A.C.S. Bandara - Co-ordinator
Ms. G.G.de.L.W. Samarasinha - Co-researcher

Source of Funding: Consolidated Fund

Scope and Objectives:

The major objective of this study was to document the impacts and lesson gained from the project to make directions to the similar future projects

Findings:

i. Some of the tank de-siltation was not completed within a short period of time.
ii. Line agencies had experienced difficulties in finding the technical staff and machinery to do the task within the limited three months period.
iii. De-siltation had no significant impact on the increase of cultivable land extent in a small irrigation system, but it had social benefits on the livelihood of the people in the area.
iv. Due to the short period of time of implementation, the process had faced difficulties of de-siltation project which needed a strong component for community awareness, active community involvement and sharing responsibilities.
v. Tank de-siltation is not financially feasible for minor tanks.
vi. Flexibility of changes of the project components and selection with the lessons drawn from the implementation and beneficiary knowledge.

Recommendations:

i. Selection of tanks for de-siltation should be based on the need of the beneficiaries. Active involvement beneficiary of the should be incorporated as much as possible during project implementation.
ii. There should be room to incorporate knowledge and views of the beneficiaries into the project.
iii. It is important to create awareness on the activities of the project before it is implemented. That will enhance the success of the project.
iv. Introduction of the water management system and educating on the selection of crops is for more efficient use of water and profit maximization.
v. The Project should not be limited to irrigation, but other avenues (Aquaculture, animal husbandry, domestic needs etc) also need to be considered when designing and implementation.

MARKETING FOOD POLICY AND AGRIBUSINESS DIVISION

The Marketing, Food Policy and Agribusiness Division – MFPAD (ex Market Research Unit) was established in the Agrarian Research and Training Institute (ARTI) in 1979 to provide market information to the Cost of Living Review Committee, which was conducted at National Level. Since then, the Division has provided relevant data and information to policy makers, entrepreneurs, traders and farmers regularly and to students on request.

In addition to the above, this Division has provided prices to the Food Procurement & Monitoring Unit that was under the Presidential Secretariat and the Ministry of Defense and Urban Development to determine the best prices for food, for the procurement of food to the government institutions (Hospitals, and Air Force, Army & Navy respectively).

Regular Work Programme

Food Information Project

Research Team:	Dr. T.A. Dharmaratne	-	Coordinator
	Mrs. C.P.Hathurusinghe	-	Co-researcher
	Mrs. Roshini Rambukwella	-	Co-researcher
	Mrs. R.P. Vidanapathirana	-	Co-researcher
	Mr. Duminda Priyadarshana	-	Co-researcher
	Mr. N.P.G. Samantha	-	Co-researcher
	Mr. W.A.N. Wijesooriya	-	Co-researcher
	Mr. E.A.C. Priyankara	-	Co-researcher

Assisted by:

Senior Statistical Officer	- 01
Statistical Officers	- 03
Statistical Assistants	- 10
Casual Investigators	- 28

Source of Funding: Consolidated Fund

The MFPA Division provides accurate data and information in time to the policy makers. As usual prices and relevant market information of food commodities were collected from 9 retail markets in Colombo and suburbs such as Pettah, Thotalanga, Dematagoda, Borella, Wellwatte, Kirulapone, Nugegoda, Kadawatha and Kiribathgoda and (Colombo) Pettah wholesale market. In addition, data and information were collected from 28 markets in major food producing districts and food consuming districts.

Data collection was done by 03 Statistical Officers, 07 Statistical Assistants and 28 Casual Investigators. For the data collection in outstations both Statistical Assistants and Casual Investigators were used.

The locations covered during the year 2013 were Kurunegala, Nikaweratiya, Dambulla, Matale, Anuradhapura, Thambuttegama, Polonnaruwa, Nuwara Eliya, Kandy, Badulla, Kappetipola, Ratnapura, Embilipitiya, Hambantota, Tissamaharama, Matara, Galle, Kalutara, Moneragala, Dehiattakandiya, Ampara, Puttalam, Marandagahamula, Meegoda and Narahenpita. During the latter part of the year, Casual Investigators were recruited to Jaffna, Killinochchi, Vavunia and, Mullativu districts.

In addition, Wholesale Prices of food commodities were collected daily from Pettah, Kandy, Dambulla, Noroichcholai, Marandagahamula, Meegoda and Narahenpita markets to disseminate daily through the Sri Lanka Broadcasting Corporation and www.harti.gov.lk web site. In addition to these markets wholesale prices from Nuwara Eliya and Thambutthegama were also collected to disseminate through SMS. On request of Ministry of Trade and Consumer Affairs collection of daily retail price of major food commodities started in October 2010. These data were disseminated daily through electronic media, to inform producers and traders on commodity prices in main wholesale markets and also in Pettah retail market in time. By analyzing both wholesale and retail prices in Colombo and outstations and producer prices in major producing areas, the Weekly Food Commodities Bulletin was issued every Friday. 52 Weekly Food Commodities Bulletins and 11 Monthly Food Information Bulletins were issued.

Progress for the Year 2013

- Weekly Food Commodities Bulletin – 52 Bulletins were issued.
- Daily Food Prices provided to the relevant authorities – for the whole year.
- Monthly Food Information Bulletins – 11 Bulletins were issued.
- Provided daily and weekly information to the media in time.
- Provided price data and other market information to the requested government and private sector agencies throughout the year.

COMPLETED STUDIES

1. Value Chain of High Value Highly Perishable Vegetables

Research Team: Ms. C.P. Hathurusinghe - Co-ordinator

Source of Funding: Consolidated Fund

The purpose of the study was to review the overall situation of high value highly perishable crops in the vegetable sub sector of Sri Lankan agribusiness and to identify, assess, and prioritize

constraints and to find out remedial measures and crosscutting policy reforms to enhance competitiveness, growth, employment, and business opportunities in the country. The channel mapping methodology was used to analyze the value chain. Based on the identified supply channels, an end market study was done to understand market requirements and critical success factors.

Study Findings:

i. The cultivation of high value highly perishable vegetables such as lettuce, parsley, celery, iceberg, Bok Choy, bell pepper, cauliflower, broccoli and cucumber has increased by 35 – 40 percent during the years 2010 and 2011 due to the increased demand from Hotels which cater to foreigners.

ii. About 50 farmers entered this crop sector in 2009 and this number had increased by 85 percent in 2010. From 2010 to 2011 about 32 percent increase could be observed.

iii. The cost of production of most of these high value highly perishable crops is less than 15 percent of the retail price.

iv. The supply chains were very clear and short because farmers and traders are linked well in the value chain to minimize losses by satisfying the consumers.

v. New generation has entered this sector due to increased demand in the local as well as the export market and also because of high prices, higher profit margins and higher income compared to that of other vegetables. The profit margin of cauliflower, broccoli and bell pepper ranged between 31 to 36 percent out of retail price while that of Chinese cabbage, iceberg, lettuce red and Pak Choy ranged between 13 to 17 percent.

vi. Farmers use agro chemicals as well as chemical fertilizers to obtain good appearance and earn higher farm income.

vii. Farmers do mixed cropping in order to maximize their farm income. Rising income had stimulated producers and agribusiness entrepreneurs to supply new varieties of high value vegetables to meet the increasing demand in local markets for fresh vegetables and in hotels and food stalls for processed foods.

viii. The development of this vegetable subsector has shown significant impact in poverty reduction of smallholder farmers mainly in the Uvaparanagama area in Bandarawela and Meepilimana area in Nuwara Eliya.

ix. There is potential to enhance the income of small farmers and create employment for rural labourers by increasing production, processing and marketing of high value crops.

x. Though these crops are available in the market, the demand from local consumers increases very slowly due to high prices, lack of awareness on culinary methods and lack of awareness about nutritional value of these crops are the potential reasons.

xi. However, in the urban areas, there is an increase in both supply and demand because the affordable consumers pay for these vegetables and due to changing food habits and awareness of nutritional value of each crop.

xii. The collectors in the producing areas kept a 15-25 percent gross margin for their investment on this high value highly perishable crop sector.

xiii. In the service sector retailers kept the highest margin which was about 25 percent of the retail price. The collectors and wholesalers kept about 8 to 13 percent margins out of retail price. The risk for selling at collectors' and wholesalers' levels are very low compared to that at the retail level.

xiv. The highest margin (32 percent) out of retail price of green cucumber was kept by the collectors followed by retailers (22 percent). The transport and handling charges at wholesaler varied from 3 – 4 percent and that of retailers varied from 4 – 5 percent. Producer's margin for red lettuce, Pak Choy and iceberg varied from 12.5 to 16 percent of the retail price**.**

xv. The producers of cauliflower and broccoli reserved a 35 and 24 percent margin of the retail price respectively while it was about 16 percent for Chinese cabbage. The wholesalers received got about 20 to 27 percent margins out of the retail prices of these crops. Both the retailers of cauliflower and Chinese cabbage kept about 10 percent of the retail price while broccoli retailers kept about 16 percent of the retail price.

xvi. Bell pepper producers gained about 40 to 64 percent of the consumer price and that of yellow and red bell pepper was over 50 percent. Their profit margin varied from 21 to 36 percent out of retail price.

Recommendations:

i. Young groups should be given agribusiness training to enhance farm income, and thereby develop rural areas.

ii. To enhance the domestic demand for these products, awareness programmes should be conducted by focusing the younger generation.

iii. Intervention is important is to make young farmers aware of minimizing agrochemical usage for the concerned crops because most of those products are consumed fresh.

2. Export Market for Organic Food: Present Status, Constraints and Future Scope

Research Team: Ms. R.P. Vidanapathirana – Co-ordinator
Mr. W.A.N. Wijesooriya – Co-researcher

Source of Funding: Consolidated Fund

Scope and Objectives:

This study mainly focuses on obtaining views of the exporters involved in developing supply chains that serve certified organic export markets. Interviews were conducted with government and non-governmental organizations as well as the private sector organizations which are the leading stakeholders responsible for promoting the organic food sector. A structured questionnaire survey was administered to all exporters involved in exporting organic food products from Sri Lanka.

Findings

i. At present, there are 38 certified organic food exporters in the country exporting spice based, fruit based, coconut based, tea and herbal extracts. These exporters are certified by the Control Union and IMO certification agencies operated in the country. About 18 exporters (48 percent) had entered the organic food export market during the period 2006-2012. There are only seven companies which deal solely in organic food export in the country.

ii. Exporting companies have different business models for the production and supply of organic food requirement for exports such as maintaining own estates/farms, out-grower systems, certified suppliers and certified processors.

iii. There is a growing market for products that are jointly fair-trade and organically certified. About 29 percent of organic food exporters had obtained fair-trade certifications.

iv. Out of the total organic food exporting companies, 16 companies are engaged in farmers (maintaining out-grower system) to meet the requirement of organic food exports. There were no written agreements between farmers and exporters. Those farmers receive benefits from the exporting companies such as receiving premium price, benefits through fair-trade premium, training related to farming, extension services, provision of organic fertilizers, enhancement of knowledge and provision of technical advises.

v. Major constraints faced by the exporters were; insufficient raw materials for export, high cost of certification, lack of research and development and high cost of production in exporting organic food products. In addition, major constraints faced by the farmers linked with exporters were high conversion period, high labour cost, lack of awareness, lack of proper marketing ventures and lack of proper inputs.

vi. About 58 percent exporters reported that they were not able to meet the export demand required by the importers due to unavailability of raw materials inadequate number of organic farmers to match the demand, lack affordable raw material lack of modern technologies and high investments in food packaging (ex: tetra packing, frees drying, vacuum drying), and limitations of packing materials.

vii. India, China, Vietnam, Thailand and Philippines are the major competitors for organic food exports.

viii. There is a growing demand and potential for organic coconut water, virgin coconut oil, herbal plant extracts, vegetables, fruit and rice in Europe, USA, Canada and Middle East countries.

Recommendations:

i. Developing national policies for organic food production to export market is important.

- Producers specially smallholders should be supported to comply with standards, certification procedures and regulations through training programmes, need to assist

farmers in converting to organic agriculture by providing incentives and facilitating a market for products during the conversion period (eg: Eco-products).

- Improving the research and development for value added products.
- Facilitate farmer linkages with the exporters and promoting Sri Lanka's organic products at international fairs.

ii. Organic exporters should be encouraged to join forces to promote and market their products. It is important to provide tax concessions to the organic food processors and exporters. Subsidies for organic inputs are essential as they contribute to the green environment.

iii. Establish third country registration unit such as NOCA (National Organic Control Authority) under the Ministry of Export Development as the control authority in Sri Lanka is important to deal with all matters connected with the use of the term "organic".

iv. Farmers/farmer organizations are unable to enter export market directly due to the high cost of certification. There should be a locally established certification schemes which is internationally recognized. Foreign certification bodies are is rarely engaged in local development and they have little interest in developing the local market.

3. Agricultural Forward Contracts as Pre-harvest Commodity Marketing: Problems and Prospects

Research Team: Mr. W.A.N. Wijesooriya - Co-ordinator
Ms. P. D. J. Champika - Co- researcher

Source of Funding: Consolidated Fund

Scope:
As an alternative to the conventional government intervention in agricultural marketing, the Central Bank of Sri Lanka introduced Forward Sales Contracts (FSC) under the *Govi sahanaya* scheme in 1999. At present, paddy, other field crops, vegetables, medicinal plants and several other horticultural crops are covered under the scheme. There is no comprehensive study to understand the present status of Forward Contracts on agricultural marketing in Sri Lanka. This study was initiated to fill that gap and focus on Maize and Soya cultivation programmes under the FSCs.

Objectives:

The major objective of the study was to assess the factors affecting the adoption of FSCs. Specific research objectives are:

i. To evaluate the critical success and failure factors of FSCs.
ii. To suggest the key policy initiatives need regarding the sustainability of the FSCs

A questionnaire Survey was done in Galenbindunuwewa and Elayapattuwa areas in the Anuradhapura District and Galnewa and Tambuttegama areas in Mahaweli system H. This study

applied the Maximum Likelihood Logistic Regression (*Logit*) method to analyze the factors affecting the adoption of the forward sales contracts system related to the two groups of contracted and non contracted maize farmers.

Findings:

i. The model indicates that variables such as experience, agricultural income and the total agricultural land holdings are positively and significantly related to farmers' decision making regarding adopt FSCs.
ii. Regarding agricultural income, significant differences between adopters and non adopters were observed since adopters have more agricultural income than non adopters. This was mainly due to the reason that 55% of adopters grow green chili and 36% grow big onion and vegetables in *Yala* season on highland. Among those crops, Green chili was high income earning crop (Rs.250,000-350,000 gross income per/0.5 Ac)
iii. Moreover, the land extent of the considered crop is negatively and significantly related to farmers' decision making process to adopt FSCs. This can be considered as the Company limits the land extent of maize from farmers (Maximum two Acres per farmer) to give more opportunities to a number of small scale farmers.
iv. Level of education, availability of family labour (fulltime) and the degree of social participation are the variables which have positive but insignificant impact on farmers' decision to adopt FSCs. The age and being a *Samurdhi* recipient are the variables which have negative but insignificant impacts on farmers' decision to adopt to FSCs.
v. Nearly 19% of the maize and 15% of soya contract farmers were women, nearly 45% of the maize and 35% of soya farmers were below 40 years of age.
vi. Over 85% of the contract farmers were satisfied over the extension service and seeds given by the company.
vii. Nearly 56% of contract maize farmers cultivated green chillies in *Yala* season. The average cultivated extent was 0.58 Ac. Other *Yala* crops are vegetables and big onion. 85% of the soya farmers cultivated paddy as the main crop in the other season.
viii. The FSC programme conducted in Vilachchiya for black gram by a company failed due to the obstruction of the traders in that area.
ix. Priority should be given to industrial processing and export oriented crops like maize, soya bean, green gram, and gherkin. There is a potential to improve FCs for black gram.

Recommendations:

i. Lack of understanding of the principles of contract farming by both parties (farmers and buyers) was the major factor for the failure of FSC. Therefore, it is necessary to create a series of awareness programmes prior to implementation of FSCs.
ii. Farmer organizations as a prerequisite for entering into contract farming because farmer organizations are more likely to reach a beneficial arrangement than individual smallholders

working alone Those arrangements minimize transaction costs and both parties could benefit from the arrangements.

iii. Development of specific guidelines and mechanism for contract farming practices is a prerequisite for success.

iv. The most suitable facilitator was development or commercial banks operating in the producing areas. They can easily provide a series of financial services like credit, insurance and savings which are the binding agents for farmers and buyers.

v. In selection of crops, priority should be given to industrial processing and export oriented crops like maize, soya bean, green gram and gherkin.

4. Comparative Study on Consumer Preference of Fruit Drinks and Carbonated Drinks in Sri Lankan Beverage Market

Research Team: Ms. Roshini Rambukwella - Co-ordinator
Mr. Duminda Priyadarshana - Co-researcher
Ms. Ruvini Vidanapathirana - Co-researcher

Source of Funding: Consolidated Fund

Scope and Objective:

The main objective of the study is to identify the existing consumer preference of carbonated drinks and fruit drinks in the Sri Lankan beverage market. Other objectives are, to study the buying behavior of the consumers for carbonated drinks and fruit drinks, to find out the factors that influence the consumer's consumption of carbonated drinks and fruit drinks and to test the consumer preference for the various existing brands of carbonated and fruit drinks. The research was carried out in Kandy, Hambantota, Anuradhapura and Gampaha districts and the sample size was 600 consumers.

Findings:

i. More than 70% of the consumers in the all four districts preferred fruit drinks to carbonated drinks because it is healthy. When considering the fruit drinks category, more than ½ of the respondents in the all four districts reported that they prefer to fresh fruit juice, followed by the ready to drink fruit juice (Nectar) category.

ii. More than 60% of the carbonated drink preferred consumers, viewed carbonated drinks as an aid to put off thirst immediately.

iii. Results from the survey indicated that, SMAK is the most preferred brand of the fruit drink variety followed by the MD brand. Kist and Minitmade were the third and fourth

brand names. When considering carbonated drinks, Elephant house Creamsoda, Elephant House Necto and Elephant House Orange Crush were the first, second and third preferred brand names of carbonated drinks respectively. Coca-cola came fourth.

iv. The study also remarked that the frequency of consuming fruit drinks is more than that of carbonated drinks due to health consciousness of people. The main considering factor of fruit drink purchasing is the health consciousness of consumers, followed by its taste. Meanwhile, the basis of carbonated drink purchasing is its taste, an aid to put off thirst and the price.

v. An important finding that emerged out of the survey was that more than 70% of the respondents in the all four districts were of the strong view that advertisements (specially T.V.ads) affect definitely or occasionally their purchases and the rest (less than 30%) of the respondents were not at all affected by advertisements.

vi. More than 85% of the respondents in the all four districts preferred popularizing of the fruit drink industry in Sri Lanka instead of carbonated drinks as they think fruit drinks are better for health than carbonated drinks. The second important reason is fruit drinks are more tasty and fresher than carbonated drinks.

Recommendations:

i. There is a growing domestic market for fruit based products. Fresh fruit juice and ready-to drink fruit nectar category has also great potential. Hence, it is required to establish and expand the fresh fruit juice centers islandwide and production items should be sold at reasonable prices.

ii. Quality and standards of beverages should be improved by frequent quality checking.

iii. Strong advertisement program must be launched to increase the awareness of fruit drinks and popularize the fruit drink industry.

iv. Package should be healthy, safe transparent and attractive. The product should be easy to carry consume and dispose (majority of the consumers preferred plastic bottles for their convenience) and the companies must consider that point.

5. A Case Study of Tomato Processing Factory Established in Matale District in the Central Province

Research Team: Ms. I.K. Edirisinghe – Co-ordinator

Source of Funding: Consolidated Fund

Scope and Objectives:

Absence of a stable and reasonable market for vegetables, specially for tomatoes is one of the main problems faced by the farmer community. As a remedy, a tomato processing factory has been established by a local investor with an investment of nearly Rs. 60 million in the *'Nalanda*

Industrial Zone' in the Matale District in the Central Province as a BOI project. Even though the local investor has commenced the factory with a lot of expectations, the factory closed down just after the first trial operation.

In that context, this study was carried out to assess the present situation of the tomato processing factory with the specific objectives of identifying socio, economic and political factors contributed to the failure of the factory and to examine the feasibility of re-opening the factory with the focus of adopting a sustainable process line.

Findings:

i. There is a need to have a project based on fresh tomatoes, due to excess availability of tomatoes every year (excess production was at 31,193mt without any use, based on 2006-2010 average data), grievances of tomato cultivating farmers due to the lack of a market, high level of post harvest losses (nearly 40%) and absence of different markets for fresh tomatoes.
ii. There is a considerable demand for tomato paste in the country (nearly 1,250mt annually) and the total requirement was imported spending a considerable amount of foreign exchange. At the same time, there were no factories in the country to produce tomato paste. Therefore, there is a need for a tomato paste manufacturing project.
iii. The estimated annual tomato requirement of the factory was 7,200mt and the estimated annual paste production was 1,029mt. Therefore, by looking at these figures, it can be concluded that the raw material requirement and demand can be met technically. However, the factory closed down after the first trial operation and it was a failed project.

Positive factors attached with the project:

i. Selected location and land, availability of required amount of fresh tomatoes in the months January to March and August to October (six months), buildings, machinery, fixed assets facilities such as electricity, water and telephone, technology, human resource funds, political support, no critical environmental issues and no political, social and economic crisis in the country were among the positive factors.

Negative factors attached with the project;

i. Mostly cultivated varieties by our farmers are not suitable for processing based on the 'brix' value and the 'lycopene' content.
ii. Level of awareness of the farmers about the project was at a minimum level.
iii. The price offered by the factory to purchase tomato was lower than the prices in the open market. This has contributed mainly not to have tomatoes for processing.
iv. Even within the period which had the lowest prices, the prices had fluctuated significantly.
v. Based on price and production data, the first trial operation was conducted at an inappropriate time (November).

Finally, it can be concluded that the impact of the negative factors was more powerful than the positive factors and therefore, that project has become a failure.

Recommendations:

Based on the findings, it is evident that large scale projects using fresh tomatoes from farmers are not sustainable under the prevailing market situations. Therefore, recommendations have been made under two major themes: to have sustainable tomato processing and to reduce market glut of tomato.

To have sustainable tomato processing

i. Encourage research on developing new varieties good for processing.
ii. Invite private sector for large scale commercial agriculture and then make subcontracts between them and the factory. For that, the government can provide abandoned cultivable lands to the private sector on rent.
iii. Pay more emphasis on technical aspects of processing with collaboration of all relevant technical experts.
iv. Restrictions on imports to protect local investors.
v. Strengthen co-ordination between all the parties such as the Department of Agriculture, Marketing, Extension, Commerce and Trade.
vi. Formulate an advisory body with the experts in the field to provide guidance to investors when necessary.
vii. Make easy access to information and data on processing, raw material availability and marketing.

To reduce market glut of tomato

i. Initiate a market oriented production. The programme implemented by the Ministry of Agriculture has to be monitored carefully and have to identify strategies to improve it in the future.
ii. Strengthen the market information system
iii. Make projections of daily, monthly and annual productions and make it available for all parties concerned.
iv. Strengthen the coordination mechanism between all Departments concerned.
v. Make strategies to increase the local consumption of fresh tomatoes.
vi. Employ strategies to absorb high quality fresh tomatoes targeting tourists.

6. Needs Assessment of Agricultural Market information Systems

Research Team: Mr. N.P.G.Samantha - Co-ordinator
Mr. W.A.N.Wijesooriya - Co- researcher

Source of Funding: Consolidated Fund

Scope and Objectives:

The importance and the use of improved agricultural market information in developing economies increase with the transformation of agriculture from diversified-subsistence to more specialized-commercial production. As farmers move away from subsistence agriculture to commercial agriculture, they interact more with traders and other actors in input and output markets, and information becomes the lubricant that facilitates such exchanges. All information about the buying and selling of products and services can be classified as market information. It should include all information throughout the marketing process. Structured marketing information systems have various ways of collecting, analyzing and disseminating information.

Objectives of the Study:

The overall objective of the assessment is to review the current agricultural marketing information system and to establish felt marketing needs for agricultural marketing participants and other interested parties.

Specifically, the study aimed at achieving the following:

i. To assess the marketing information needs among stakeholders in agricultural marketing.
ii. To assess the current level of satisfaction and utilization of existing marketing support (information) services.
iii. Make recommendations for necessary improvements, if any, to the current agricultural marketing information system.

7. An Evaluation of Mobile based Market information Systems in Sri Lanka

Research Team: Mr. W.H.D. Priyadarshana - Co-ordinator
Ms. R.P. Vidanapathirana - Co-researcher
Mr. W.A.N. Wijesooriya - Co-researcher
Ms. R.N.K. Rambukwella - Co-researcher

Source of Funding: Consolidated Fund

Scope and Objectives:

One of the perceived benefits of modern ICT is to have greater access to information on markets and prices. Price information can make an impact by improving the bargaining capability of farmers with traders, better price realization and reduction in arbitrage, wastage or spoilage. Among modern ICT modes, mobile telephone has been the most recent and widely accepted mode of delivering information in South Asian and African countries. Recently, in Sri Lanka, two mobile companies started dissemination of price data of major markets in the country for selected agricultural commodities. HARTI initiated daily vegetable wholesale Price dissemination program in 2012 of major vegetable commodity system by connecting Colombo

wholesale market with other 7 major Economic Centers, through the mobile communication platform.

The purpose of this study is to ascertain, at micro level, whether the distribution of agricultural information through mobile phones generates important economic benefits in rural and agricultural settings in Sri Lanka.

Objectives:

The overall objective of this study is to assess the impact of market price dissemination programmes through mobile phones in Sri Lanka.

Specific Objectives:

i. Examine the utilization of the information on decision making by the farmers
ii. Identify benefits gained from two programmes of price dissemination for farmers
iii. Ascertain the beneficiaries' views on the existing market price dissemination programmes

A questionnaire survey was conducted in all districts and the data analysis is in progress. During the study, numbers of farmers, traders and private sector stakeholders were interviewed to get information.

8. Pre-Feasibility Study for Establishment of Vegetable Direct Marketing System

Research Team : Mr. E.A.C. Priyankara

Source of Funding : Consolidated Fund

Scope and Objectives :

The main objective of this study was to find out the feasibility of applying the direct selling system with a special focus on vegetable marketing in Sri Lanka. The specific objectives are as follow

i. To review experience on direct marketing of vegetable in Sri Lanka.
ii. To understand the farmers willingness to practice direct marketing and their characteristics.
iii. To identify best practices of direct marketing of vegetable.
iv. To identify suitable places for establishing direct marketing centers for vegetable

Findings

i. About 76% of the direct marketers were in the age group of 40-60 years and it indicates that young farmers are less interest of direct marketing of vegetable.

ii. Primary occupation of more than 67% of the direct marketing farmers was agriculture (mainly from vegetable farming) while secondary occupation of 67% was sources other than agriculture (Business-43%, self employment-25%).

iii. Nearly 10% of the vegetable sellers in the selected pola markets were direct marketers.

iv. The direct marketing farmers do not sell only their own product in their selling item and out of total quantity sold, 65% was own products while the rest 35% had purchased from neighboring farmers or from the wholesale market.

v. Number of vegetable sold in a one selling by a single farmer was not limited to one or two and on an average six vegetable sold.

vi. On an average 50 kg of vegetable sold by a low country vegetable farmer while 84 kg sold by up country farmers.

vii. The average volume of trade of a one selling day for low country farmers was Rs. 2425.00 and it was Rs.4811.00 for up country vegetable farmers.

viii. The management of the farm was done by the farm family itself. 51% of the farms are managed the by farmer himself while 47% managed by a family member indicating farmers are not willing to give the management of the farm for others.

ix. Among direct marketers, 53% is employing only family labor while 44% utilizing both family and hired labor?

x. Nearly 66% of the direct marketing farmers cultivate less than 50 perches in a single crop indicating that small land holders are more attracted with direct marketing.

xi. Direct marketing farmers have to engage with business year round irrespective of availability of their own product to sustain in the field.

xii. Age distribution among the farmers who are willing to join with direct marketing was indicated the similar picture with present direct marketers. About 58% of the sample was in the age category of 40-60 years.

xiii. The education level of the farmers was in a fair position and more than 73% had attended secondary education and above.

xiv. Average family size was 4 members in a family and it was similar in both up country as well as low country vegetable farmers.

xv. About 60% is earning more than Rs.25000.00 per month and vegetable farming was the main primary source of income of the majority (90%). Non agricultural income in a lower position and about 60% is earning less than Rs.5000.00 a month indicating the need of income diversification.

xvi. Extent cultivated by farmers those who are willing to practice direct marketing have given some insight about the possibility of direct marketing. Allocated land extent for one crop was less than 0.5 acre of the majority (64%).

xvii. While doing direct marketing, farmers are interest to utilize both family and hired labor. About 83% of the sample use 1-3 persons as family labor while 72% employ 5-6 persons as hired labor in their field. This finding indicates that farmers are not interest to release total family labor from the field and hand over the total responsibility to only hired labor.

xviii. About 80% of the sample does not like to travel more than 20Km and 73% does not willing to travel to western province for direct marketing.

xix. Farmers suggested different places to establish direct marketing centers considering various factors. 32% of Thambuttegama farmers suggested the BALALU WEWA junction while the 29% suggested Dambulla main road. Among Melsiripura farmers, about 35% suggested Melsiripura while 15% suggested Madahapola. 40% of the Bandarawela farmers suggested the Welimada town while 48% of Nuwara Eliya farmers suggested the Nuwara Eliya town.

HUMAN RESOURCES AND INSTITUTIONAL DEVELOPMENT DIVISON

Scope of Trainings:

Training programs conducted by the Human Resources and Institutional Development Division

1. Co-ordination, organization and preparation of general training programs based on the needs of the farmer community specially to implement the Mahinda Chintana Development Programme.
2. Co-ordination and preparation of training programs on the request of various organizations related to the agrarian sector and implementing Action Research Projects
3. Providing training expertise to other organizations on request.
4. Designing and conducting Research Projects under Mahinda Chintana Development programme.

Apart from the above training, seminars and workshops are organized and co-ordinate collaboratively with other national and international organizations.

Training programs conducted all over the country during the year 2013 by the Human Resources and Institutional Development Division are as follows:

1. Training Programme on Participatory Techniques (RRA, PRA & PCM) for Planning & Management of Rural/Community Development Projects, (No. of Programs conducted-04)

Training Team:	Mr. N S B Epakanda	-	Co-ordinator
	Dr. M S Senanayake	-	Head/HRID
	Mr. J K M D Chandrasiri	-	Head/APPED
	Mr. S M A Samarakoon	-	SOR/HRID
	Mr. R L N Jayatissa	-	RA/APPED
	Mr. S Epasinghe	-	RO/ARMD
	Mr. P.C.J. De Silva	-	RO/HRID

Objectives:

i. The main objective of the training program was to enhance the knowledge of the officers who are directly involved in the Agrarian and Community Development activities on preparing participatory community action plans.
ii. To enhance the participants' knowledge on the concepts and methods used in Participatory Planning & Management.

Details of the programmes conducted

	Participant	Date	No. of Programs	No. of Participants
1.	Agriculture instructors in Central Provincial Council	2013/02/18 2013/02/23	01	36
2.	Officers of Agriculture Ministry in Sabaragamuwa Provincial Council,	2013/05/13 2013/05/17	01	40
3.	Officers of Agriculture Ministry in Southern Provincial Council	2013/05/27 2013/05/31	01	30
4.	District planning officers in District Secretariat, Kandy	2013/06/17 2013/06/22	01	43
			04	**149**

2. Training Programme on Marketing Extension (No. of Programs conducted-02)

Training Team:

Dr. L P Rupasena	- Co-ordinator
Mr. N S B Epakande	- Co-ordinator
Dr. T A Dharmaratne	- Head/MFPAD
Mr. W H D Priyadharshana	- RO/MFPAD
Mr. E A C Priyankara	- RO/MFPAD
Mr. N G P Samantha	- RO/MFPAD
Mr. W A N Wijesuriya	- RO/MFPAD

This training program was designed to train the extension staff on marketing extension in order to promote market-oriented production system.

Principle Objectives were:

i. To enhance participants' knowledge over the concepts on marketing extension and preparation of business plan.
ii. To understand ways and means of delivering marketing extension among farmers.
iii. To understand the use of market information on production and marketing planning.

Details of the programme conducted:

	Participant	Date	No. of Programs	No. of Participants
1.	Officers attached to the Ministry of Agriculture in Southern Provincial Council	2013/03/18 2013/03/21	01	29
2.	Officers attached to the Ministry of Agriculture in Central Provincial Council	2013/06/10 2013/06/12	01	44
	TOTAL		**02**	**73**

3. Training Programmes on Social Mobilization (No. of Programs conducted-05)

Training Team: Mr. S M A Samarakoon – Co-ordinator
Dr. M S Senanayake - Head/HRID
Dr. N S B Epakande - RO/HRID
Mr. P C J De Silva - RO/HRID

This training program was mainly designed for Agricultural and Rural Development Officers who were involving in agrarian and rural development activities as social mobilizes.

Objective:
The objective of the training program was to enhance and strengthen participants' theoretical and practical knowledge on social mobilization and participatory development.

Details of the programs conducted

	Participant	Date	No. of Programs	No. of Participants
1.	Agricultural Research and Production Assistants attached to the Agrarian Development dept. in Matara District.	2013/02/04 2013/02/08	02	110
2.	Agriculture Extension Officers attached to the Agriculture Ministry in Sabaragamuwa Provincial Council	2013/06/10 2013/06/13	01	53
3.	Agriculture Extension Officers attached to the Agriculture Ministry in Central Provincial Council	2013/07/08 2013/07/11	01	31

4.	Agriculture extension officers attached to the agriculture ministry in southern provincial council	2013/08/21 2013/08/24	01	37
5.	Agriculture extension officers attached to the agriculture ministry in southern provincial council	2013/08/21 2013/08/24	01	31
	TOTAL		**06**	**262**

4. Training of Farmer Leaders on Strengthening of Farmer Organizations
Ratnapura District

Training Team: Dr. M S Senanayake – Co-ordinator
Mr. S M A Samarakoon - SRO/HRID
Mr. P C J De Silva - RO/HRID
Mr. N.S.B. Epakanda – RO/HRID
Mr. R.B. Dissanayaka - External Resource Person

Farmer organization is one of the popular community based organizations in Sri Lanka which has legal power under the Government Act to carry out do various kinds of development activities in Rural Farming Community. There are about 14000-15000 farmer organizations in Sri Lanka as indicated by various sources. But only about 6000 farmer organizations actively work and are registered under the Agrarian Development Act. However, of them, most of the organizations are blamed for lack of effectiveness in providing the expected service.

The Objective:

The objective of this programme was to empower the farmer leaders and strengthening farmer organizations to get maximum benefits from the organizations to the farmer communities to fullfill the Mahinda Chintana National Development programme.

The topics discussed:

i. Leadership for the success of organizations
ii. Social Mobilization; Role of Farmer Organizations and their legal framework
iii. The importance of maintain records by Farmer Organization
iv. Nature Farming.
v. Discussion of the main problem of Famer Originations

This programme was aimed at training all farmer organization leaders in relevant districts, specially the Chairman, Secretary, Treasurer and the Action Committee members. During 2013, this programme was conducted only in one (01) district Ratnapura.

According to official sources in the Agrarian Development Department in the Ratnapura district, there are 450 farmer organizations in operation. We were able to train three main office bearers of each farmer organization (715 personnel) of all those farmer organizations in 10 training programmes.

The Ratnapura District Office of the Agrarian Development Department fully assisted the organizing activities as well as providing resource persons for the training programmes.

	Participant	**Date**	**No. of Programmes**	**No. of Participants**
1.	Chairman, Secretary, Treasurers in all farmer originations in Ratnapura district.	2013/03/11 - 2013/03/16 2013/04/02 – 2013/04/07	10	715
	TOTAL		**10**	**715**

5. Training Programme on "Empowerment of Farmer Leaders on Traditional Farming Technology (Nature Farming)"

Training Team: Dr. M S Senanayake – Co-ordinator
Mr. S M A Samarakoon - SRO/HRID
Mr. P C J De Silva - RO/HRID
Mr. Thilak Kandegama – Chairman/Jathika Govi Samuluwa.

The Nature Farming Training Program is specially designed for all kinds of farmers, farmer leaders and other field level officers who are directly involved in the agriculture sector, and the higher and middle level officers as well as policy-makers and political leaders.

Objective:

The objective of this one-day awareness training programme was to provide participants with the knowledge in the following areas:

- Organizational Leadership
- The farming system based on organic tradition
- Customs, ethics and values prevailed in the traditional indigenous agriculture
- The effect of astrology on agriculture

The Training Programmes consisted of lectures, presentations, video films as well as discussions. They had very high responses from the officers at various level and farmer leaders. In the year 2014, more than 15 training programs were conducted, and about 1419 people were trained. Different kinds of groups participated in these programmes such as Farmer Leaders, Field Level Officers, Administrative Level Officers, teachers and many other groups. Several districts were covered by this programme specially, Hambantota and Matara. There were many farmers and farmer organizations which started nature farming at experimental level.

Details of the Programs Conducted:

District	Training Programs	Output (Officers and Farmers)
Hambantota	05	535
Hambantota/Matara	05	597
Hambantota	05	287
TOTAL	**15**	**1419**

6. Training programs for all staff of HARTI

1. A training programme on productivity improvement for efficient service of HARTI staff. Was conducted. This was a one-day training programme and three programs were conducted for all staff of about 200 officers on 13th , 17th, and 20th December 2013 at HARTI. The program aimed at developing the working knowledge of all staff to get their optimum service to HARTI.

Subjects:
Introduction of HARTI and its activities
Establishment Code and office activities
Financial Regulations

The first lecture of the programme was conducted by the Additional Director of HARTI and the Head of HRID. To conduct other lectures, assistance of a resource person of the Institute of Sri Lanka development Administration was obtained.

7. Development forum

The HRID of HARTI organizes special guest lectures on important timely topics. During the year, two programmes were conducted under following topics.

i. "Attitude change for productivity development" conducted by Mr. W.S. Mangala. the Assistant Director of Planning Matara District Secretariat on 29th Nov. 2013.

ii. "How can human resources of HARTI be productively used for national development" conducting Dr. Ravindra, Senior Lecture of the University of Colombo on 6th Dec. 2013.

Deyata Kirula 2013/2014

Under the Deyata Kirula 2013, there were several training programmes held in Trincomalee, Batticoloa, Kegalle and Kurunegala districts:

1. Farmer Organization Empowerment Training Programme

   The Farmer Leaders in all the Agrarian Development Centers in Trincomalee, and Batticoloa were involved in this training programme. There were 45, one-day training programmes conducted in the above 04 districts and trained around 3440 Farmer Leaders and Agricultural Research and Production Assistants.

   One-day training programme covered

   Leadership
   Social Mobilization and Empowerment
   Legal Procedures and Role of Farmer Organizations
   Documents maintained in Farmer Organization and Accounting
   Discussion of problem in all Farmer Organizations

District	Training Programmes	Output (Officers and Farmers)
Batticaloa	11	798
Trincomalee	10	617
Kegalle	09	605
Kurunegala	15	1420
	45	**3440**

COMPLETED STUDIES

1. Evaluation of Divineguma Home Gardens Programme

Research Team :	Mr. P.C.J.De Silva	Co-ordinator
	Dr. M.S.Senanayake	Co-researcher
	Mr.N.S.B.Epakanda	Co-researcher
	Mr.S.M.A.Samarakoon	Co-researcher

Scope of the Study:

Development of home gardens was the highlight of the agriculture component of Divinaguma Household Economic Units Development Programme. Among its objectives, increasing the consumption of the households and thereby increasing the nutrition intake of the people, improving the savings of households through reducing expenditure on food purchasing and supporting households to earn additional income by selling excess production were there. In addition, increasing the market supply of vegetables and thereby stabilizing the prices were also targeted. This study evaluates the achievements of the above objectives.

Objectives of the Study:

i. Looking into the people's opinion of the *Divineguma* Home Gardens Programme
ii. To find out whether households have adopted homegardens as a result of this particular homegardens programme.
iii. Assessing the impact of *Divineguma* homegardens programme on reducing the monthly household expenditure on vegetable consumption.
iv. To assess whether the increase of household vegetable consumption has occurred due to through the adoption of the new homegardens programme.
v. To come out with more viable and practicable suggestions with which households can be encouraged for home gardens

Findings of the Study:

i. 98% of the beneficiaries joined the program by consent.
ii. The production of vegetable of 93% of the sample households has increased at different levels in the short term.
iii. 62% of the households are not happy with the awareness received on homegardening.
iv. According to 62% of the households the quality of the seeds provided were poor.
v. The households are unhappy with the service of ARPA,SDO and the GN. The percentage is 71%, 78% and 86% of respectively.

vi. Only 19% of the households had made an income from homegardens.

vii. 51% of the households had shared their excess with neighbors.

viii. 91% of the households expect better awareness and home gardening training.

Recommendations

i. Should involve only the interested households

ii. Should be given an adequate knowledge and practical training on how to plan the garden, prepare ground for different varieties of crops depending on the nature of the land, pests control and how vegetable cultivation can be used as a means of land beautification etc.

iii. Periodical monitoring and evaluation is a must.

iv. Should make quality seeds and other planting materials readily available at the right time.

v. Households should be made aware of how to maintain a dependable homegarden in the dry season (This is required very much for maintaining homegardens in the dry zone as well as in the wet zone in the dry season)

vi. Through media, the massage of the advantages of homegardens should be strongly carried to be public

2. Production and Marketing of Betel

Research Team: Mr. H.M.J.K Herath - Co-ordinator

Source of Funding: Consolidated Fund

The main objective of this research is to identify problems and constraints in betel cultivation for the export market and understand the marketing constraints. Two main betel cultivation districts were selected for the study are Kurunegala (80% producers) and Gampaha (20%). The total sample comprised of 150 farmers: 120 from Kurunegala and 30 farmers from Gampaha.

Findings:

i. Sample represents 90% of male and 5% female farmers. Majority of the farmers (85%) were between 45-55. Sixteen percent of thee farmers had education up to G.C.E (A/L). Betel cultivation was done by 86.6% of the farmers as the main income generating activity, cultivation experience of 26-30 years represents 15.3% of the farmers.

ii. About 15% of the farmers have over 25 years of experience in cultivation of betel..

iii. 36.6% of the farmers cultivate betel due to family inheritance.

iv. Farmers did not have sufficient training (3%) and credit facilities for betel cultivation. Majority (86%) of the farmers utilize cow dung as input for betel cultivation.

v. The most severe problem faced by betel farmers is difficulties in supply. Farmers sell their products to both export and local markets. Betel leaves from 5000-10000 are to by 29.3% of the farmers to the export market. Furthermore, 2.7% of the farmers sell more than 40,000 betel leaves to the export market.
vi. Finding good quality planting materials also causes a big problem (65%) for farmers.
vii. In marketing 21% of the farmers faced problems due to middlemen and received lesser prices irrespective of the price fluctuations. Lack of reasonable prices in also a problematic situation for farmers.

Recommendations:

i. As a substitute for betel sticks, strings can be introduced since it is cheaper and easy to maintain.
ii. Due to disease conditions occurred in betel cultivation, finding good quality planting materials are problematic therefore, nurseries should be maintained by the Department of Minor Export Crops to obtain good planting materials at cheaper prices for the farmers.
iii. To solve the problem of marketing of betel, it is important to establish a betel export marketing centre at Kurunegala with a sub centre at Gampaha.
iv. It is important to start training programmes on betel cultivation in addition to credit schemes for the benefit of betel farmers.

OTHER ACTIVITIES

1. Publications & Presentations

Mr. M.M.M Aheeyar presented a paper titled "Climate change adaptation in water management for food security: Recent developments in Sri Lanka-A review of Existing Knowledge and Information" at the Consultancy Workshop on Climate Change Adaptation Activities under the UN Asia Pacific Adaptation Network, Hotel Janaki, Colombo on 20th December 2013.

T. A. Dharmaratne, published a paper article on "International Labor Market and Migration: Analysis of Strategic Approaches, Future Planning and Challenges" (Sinhala) in the Book of "Community Development Enterprise" prepared by the Saviya Development Foundation Galle, Sri Lanka, 2013.

T. A. Dharmaratne submitted and published a paper on "Challenges of Improving the Statistical Literacy and Skills in Sri Lanka: Small Country Experiences" in the world Statistical Congress, Hong Kong. China in August 2013.

Ms. Subashini Perera, Ms. Rasika Wijesinghe, Ms. Malathi Rambodagedara presented a Paper titled "Growth and Diversification of Fruit and Vegetable Export in Sri Lanka" at the 7th Annual Research Forum of the Sri Lanka Agricultural Economics Association (SAEA) held at University of Peradeniya, on 20th December, 2013.

2. Serving in Expert Committees

Mr. M.M.M Aheeyar served as a Vice Chairman of "Lanka Rainwater Harvesting Forum".

Mr.M.M.M. Aheeyar served as a steering committee member of "Sri Lanka National Water Partnership (Lanka Jalani)".

Ms. G.G. de. L. W. Samarasinha served as a steering committee member of the Young Scientists' Forum (YSF) of National Science and Technology Commission (NASTEC) for the year 2013.

Mr. M.A.C.S. Bandara served as a steering committee member of the Young Scientists' Forum (YSF) of National Science and Technology Commission (NASTEC) for year 2013.

Mr. M.M.M. Aheeyar served as a member of panel of reviewers for the papers submitted for the annual symposium of Young Scientists Forum to be held in 2014.

C.P.Hathurusinghe served as a member of the Technical Evaluation Committee on procurement of food to the government institutions (Hospitals, and Air Force, Army & Navy).

C.P.Hathurusinghe served as a member of the Committee on Potato and Onions at the Ministry of Economic Development

C.P.Hathurusinghe served as a member of the Committee on Consumer Welfare – Food (Agriculture and Fisheries)

T. A. Dharmaratne, served as a trust member of the Trust Board meeting of the Megoda Dedicated Economic Centre, chaired by the Ministry of Trade.

T A Dharmaratne, served as a committee member of the National Committee on Socio-Economics and Policy Analysis that conducted by the Sri Lanka Council for Agricultural Research Policy in the year 2013.

3. Special Reports

Dr. T. A. Dharmaratne has prepared and submitted a report on "Nature of Food Price Changes in Sri Lanka" as a fulfillment of special request done by the "The Committee on Public Enterprises (COPE) in the Parliament of Sri Lanka, in April 2013.

4. Training

EWRM division coordinated a National Dialogue on "Climate Change and Bulk Water Allocation Experiences of Mahaweli System H" in association with Sri Lanka Water Partnership on 19th November 2013.

T. A. Dharmaratne, coordinated and conducted a series of lectures and other evaluation activities, including final examination for the course on "Development Planning and Project Management" to the students in the special degree program (fourth year) of the Department of Economics, University of Sri Jayewardenepura, in the academic year of 2013.

T. A. Dharmaratne, conducted a series of lectures on rural development and agricultural marketing to the students in the special and general degree programs of the Department of Economics, University of Colombo, in the academic year of 2013.

T. A. Dharmaratne, has participated in a series of meetings and discussions on "National Subcommittee for the quality improvement of agricultural and livestock data" coordinated by the Department of Census and Statistics and the Ministry of Agriculture.

DATA AND INFORMATION MANAGEMENT (DIM) UNIT

This unit comprises of two sections namely the Agrarian data bank and data processing unit. The data bank has been conceived as a facility for social science research, planning and policy marking for development in the agrarian sector. The basic principles which underline the establishment of the data bank are:

01 To facilitate ready and equal access to the existing quantitative data, such data Should be centrally located and the services should be automated.

02 Serving as a coordinating agency for quantitative data to identify gaps in information and new data needs and activate generation of new series of data.

03 Data collected through special survey and studies can be used for various purposes in addition to those for which they were collected, and thus, be valuable resources to social scientists both in the present and the future and that the value of the data becomes enhanced when information regarding the characteristics of the data is also available.

The data base is ideally located within a social science oriented research environment, where researchers collect data from diverse sources and also generate information though their own studies.

The Department of Census and Statistics, Department of Agriculture, Department of Customs and Central bank are major sources from which the data is currently collected.

The activities related to data bank fall in to following six categories.

i. Data collecting
ii. Coding
iii. Verification
iv. Storing
v. Retrieving
vi. Analyzing

Data collection is carried out from the above said sources together, their website and text books published by relevant organizations. Some of data coming under prices of food commodities are collected from Marketing and Food Policy Division of HARTI.

During the year, the computer based information system was further implemented to run over standalone environment and also for better performance. The data verification alone with regeneration of indices was carried out to increase the performance of the computerized data base. The following indicators were updated during the year.

Land use	:	Asswedumised extent of paddy 2010/2011 year
		Cultivated extent of paddy and other field crops 2011/12 Maha , 2012 Yala
Crop care	:	Gross extent harvested and net extent harvested of paddy 2011/12 Maha , 2012 Yala .
Marketing	:	Average retail prices of Food Items 2011
	:	Average Producer prices of Food Items 2011, Average wholesale prices of Food Items in Colombo and outstations 2012
	:	Quantity of exports 2012
		Value of exports 2012
		Quantity of imports 2012
		Value of imports 2012
Production	:	Production of Food crops 2011/12 Maha , 2012 Yala
		Average Yield of paddy 2011/12 Maha ,. 2012 Yala
Cost of Production	:	Cost of production of paddy (Irrigated & Rain fed) 2010/11 Maha & 2011 Yala
		Cost of production of other field crops(Irrigated & Rain fed) 2010/11 Maha & 2011 yala
	:	Cost per unit of produce in paddy & other field crops 2010/11 Maha & 2011 Yala
Income	:	Gross return per acre of paddy (Irrigated & Rain fed) 2010/11 Maha & 2011 Yala
		Net return per acre of paddy (Irrigated & Rain fed) 2010/11 Maha & 2011 Yala
	:	Return to man day in paddy cultivation (Irrigated & Rain fed) 2010/11 Maha & 2011 Yala
		Gross return per acre of other field crops(Irrigated & Rain fed) 2010/11 Maha & 2011 Yala
	:	Net return per acre of other field crops (Irrigated & Rain fed) 2010/11 Maha & 2011 Yala
	:	Return to man day in other field crops (Irrigated & Rain fed) 2010/11 Maha & 2011 Yala
General	:	Self sufficiency ratio of paddy 2012

Provision of data on requests

The breakdown of the requests received from both internal and external users for agricultural information by the unit is as follows.

Number of internal requests attended	= 89
Number of external requests attended	= 47

Total number of requests = 136

Participation at field level data collection in Institute surveys

a) Present status and constraints in Palmyra Industry in Sri Lanka R 445.

b) Present status and Future prospects of the spice based oil industry.

c) Socio Economic factors affecting the productivity of green gram.

No of records entered to the computer

Average producer prices of food items 2011	= 12878
Average wholesale prices 2011	= 8851
Average wholesale prices 2012	= 7110
Average retail prices of food items 2011	= 32150
Quantity and value of Imports & Exports 2011	= 800

Books referred to collect data

a) Annual report of Central Bank – 2012

b) Economic and Social Statistics of Central Bank – 2012

c) Statistical abstract of Dept. of Censes and Statistics – 2011

d) Cost of cultivation of paddy and other field crops 2010/11 Maha & 2011 Yala

e) External trade statistics of Dept. of Custom - 2012

Apart from maintaining agrarian data bank, analysis of data collected from sample surveys, carried out by the institution, have been done by this unit.

Project Code	**Title of the Project**
R – 437	Evaluation of Dedicated Economic Centres" A Comparative analysis in Norochcholai and Nuwara Eliya
R – 438	Viability of controlled Environmental Agriculture for vegetable farmers in Sri Lanka
R – 424	Agricultural forward contracts as pre harvest commodity marketing: problems and prospects
R – 444	An evaluation of performance of Samurdhi Bank in poverty alleviation
R – 445	Present situation and future potentials of Kitul Industry
R – 452	Investigation of peri urban dairy production system in Seethawaka area

R – 450	Comparative study on consumer preference and demand of soft drink & fruit juice in Sri Lankan beverage market
R – 462	Present status and future prospects for the spices based oil industry in Sri Lanka
R – 446	The social economic condition stakeholders of Palmyra industry in Sri Lanka
R – 457	An analysis of effect of farmer decision making for the price volatility: Case of vegetable sub sector in Sri Lanka
R – 456	Permanent Crop Clinic Programme an Evaluation:
R – 453	Social Economic Evaluation of Dairy Industry in Mahaweli Area and potential for expansion
R – 466	Economies of Scale and Technical of paddy farming in Low Country Wet Zone
R – 469	Per–Feasibility study of establishment of direct marketing System for fresh agriculture products
R – 458	Needs Assessment of Market Information System
R – 468	Integrated Watershed Management Approach: Case of Upper Water Management Project(UWMP)

Publication Referee : Statistical Abstract – 2011(Department of Census and Statistics)
:Cost Of Cultivation – 2010M&2010Y(Department of Agriculture)
: External trade Statistics - 2010 (Department of Customs)
: Paddy Statistic (Department of Census) 2011M & 2011Y
: Economic & Social Statistic 2011(Central Bank)
: Annual Report of Central Bank 2011 (Central Bank)

LIBRARY

The main objective of the library is to collect, compile, retrieve and disseminate information related to the agrarian sector for the benefit of HARTI Research Staff and other interested persons and agencies. During the year, the staff borrowed 717 books and 155 issues of journals for their reference requirements. The number of visitors to the library during the year was 327.

Acquisition of books, journals and reports

During the year 178 books were added to the book collection; 33 books and 145 books were purchased received on complimentary basis, under the exchange of publication program. A large number of periodicals, newsletters, annual reports from foreign and local institutions were also received on complimentary or on exchange basis. The library also subscribed to 08 foreign journals titles (which included 96 issues) and 06 local journal titles.

Library Services

Requests for information and documentation services as literature searches, reference services, current awareness services and photocopying services were provided to the research staff and also to the outside users.

Access to internet based information facilities has been further extended for the research staff with the ADSL facility in the library. Collection of newspaper articles on various subjects and indexing of the articles for quick reference continued for the use of research staff and outside users.

Inter Library Cooperation (ILC)

The library is a member of the Agricultural Libraries Information Network (AGRINET) and the CARP Library functions as the focal point. The library continued to participate in AGRINET SDCP scheme (Selective Dissemination of Content Pages database).

Supplied bibliographical references from the library collection to the following databases maintained by AGRINET

1. National Agricultural Bibliography (NAB)
2. Bibliography on Indigenous knowledge (With reference to Agriculture)

It supplied bibliographical references from the library database to the National Library and Services Board to update the National Union Catalogue for year 2013.

Digitization of Institute Publications

National Science Foundation digitized our institute publications till 2011 and provided the services of two data entry operators (at the cost of NSF) in uploading the digital files to our site. (www.harti.nsf.lk).

The aim of this project is to establish an institutional e-repository and provide quick and enhanced online access to institute's publications.

Publication Exchange Programme

Twenty (20) Institute's publications (books/journals) of the Institute were sent to the under mentioned libraries on exchange basis.

1) Parliament Library
2) Post Graduate Institute of Agriculture
3) Social Economic Center of Department of Agriculture
4) Department of Census and Statistics.
5) Center of Department of National Planning (Development Information)
6) Center for Poverty Analysis (CEPA)

In exchange, the library received 32 publications from the above libraries.

PUBLICATION UNIT

The Publication Unit of the Institute, which functions under the purview of the Additional Director is engaged in editing and publishing of Research Reports, Occasional Reports, Journals, Newsletter, Bulletins, Manuals, Brochures and other informational materials in all three languages.

A total of 21 research reports were released in Sinhala and English during the year. The details are as follows:

1. Assessment of Solar Powered Drip Irrigation Project Implemented by Ministry of Agriculture (ER 148)
2. Crop Production in Anicut Schemes of Walawe Basin (ER 149)
3. Issues in Big Onion Seed Production and Marketing (ER 150)
4. Farmer Participation in Irrigation System Management: Achievements and Drawbacks (ER 151)
5. Cultivation Credit for Chillies, Big Onion and Potatoes: An Assessment of Credit Sources and Their Issues (ER 152)
6. Profitability of Paddy Farming in the Dry Zone of Sri Lanka (ER 153)
7. Factors Affecting Less Youth Participation in Smallholder Agriculture in Sri Lanka (ER 154)
8. Diversification of Paddy Lands in *Yala* Season: Causes Consequences Constrains (ER 155)
9. Adoption of Drip Irrigation Systems: Problems and Options (ER 156)
10. Informal Land Fragmentation in Settlement Schemes (ER 157)
11. An Analysis of Contract Farming in Vegetable Seed Production (ER 158)
12. Pattern of Consumption of Fruits and Factors Affecting Consumption in the Western Province of Sri Lanka (ER 159)
13. Change in Other Field Crop Cultivation in the North Western Province (ER 160)
14. Youth in Development: Sri Lanka (ER 161)
15. Alternative Approaches to Small Tank/Cascade Rehabilitation: Socio-economic and Institutional Perspective (ER 162)

16. Farmers' Response on Agricultural Programmes Telecast by National Rupavahini under sponsorship of Agriculture Department: Based on Kurunegala District (SR 52)

17. Consumption Rice Flour by product (SR 53)

18. Turmeric Cultivation in Sri Lanka: Constraints and Potentials (SR 54)

19. Evaluation of Youth Contribution Programme for Self Employment in Polonnaruwa District (SR 55)

20. Evaluation of Rice Processing Village (SR 56)

21. Factors Affecting Less Youth Participation in Smallholder Agriculture in Sri Lanka (Sinhala and Tamil Translations)

In addition, following publications were also released during the year:

1. *"Govi Janathawa* – 2013 January - March, Vol. 16, No. 1

The Unit participated in the following exhibitions during the period concerned.

1. "*Dayata Kirula*" National Programme
2. National Farmers Week ("*Govi Sathiya*")

STAFF POSITION AS AT 31st DECEMBER 2013

	Positions as at 31.12.2012	Termination, Registration During the year	Appointments	Positions as at 31.12.2013
Director	01	01	01	01
Additional Director	01	-	-	01
Head of Division	05	-	-	05
Research Staff	33	03	-	30
Administrative Staff	07	-	01	08
Senior Staff of Library	02	01	01	02
Data Development Unit	-	-	-	-
Computer Unit	01	-	-	01
Publication Unit	01	-	-	01
Statistical Staff	21	01	04	24
Technical Staff	01	-	-	01
Clerical, Secretarial & Parallel Grades	50	03	-	47
Operative & Allied Grades	48	01	-	47
Total	**171**	**10**	**07**	**168**

STAFF DEVELOPMENT

In 2013, the Institute has invested Rs. 1.1 million for staff development. 39 staff and 07 non staff members had undergone local training and 10 staff members had opportunity in participating foreign training. In addition a training programme on productivity improvement was held for all staff.

The following Research Officers were engaged in Post-Graduate studies.

Mr. W.H.A. Shantha - Doctoral Course Student at the Department of Global Agricultural Sciences, the Graduate School of Agricultural and Life Science, the University of Tokyo, Japan.
12th April 2011 to 31st March 2014

Ms. M.T. Pathmajani - Masters Programme on Environmental and Resource Economics, University of Canberra, Australia.
07th January 2013 to 31st December 2014

Participation at International Training Programmes/Seminar/Workshops/Conferences/Meeting etc.

Ms. P.A.J. Champika – Research Officer attended the "Sustainable Rural Livelihoods" held in Hyderabad, India., from 03 – 13 January 2013.

Mr. N.S.B. Epakanda and Mr. S. Epasinghe - 02 Research Officers attended the CIRDAP NIRD Collaborative International Training on "Management of Rural Housing Projects" held in Hyderabad, India., from 28 April – 05 May 2013.

Mr. S. Epasinghe – Research Officer attended the CIRDAP-NIRD Collaborative International Training on "Management of Rural Housing Projects" held in Hyderabad, India., from 28 April – 05 May 2013.

Mr. M.M.M. Aheeyar – Research Associate attended to present a paper at the 5th Delf Symposium on "Water Sector Capacity Development" held in Netherlands, from 27 May – 02 June 2013.

Mr. E.M. Abhayaratne – Director attended the "28th Meeting of CIRDAP Technical Committee (TC 28) & Workshop" held in Indonesia (Jakarta), from 19 May – 28 May 2013.

Mr. E.M. Abhayaratne – Director attended the "Nineteenth Regular Meeting of CIRDAP Governing Council (GC-19) and Sixth CIRDAP Regional Policy Dialogue (RPD-6)" held in New Delhi, India., from 26 September – 02 October 2013.

Mr. W.H.D. Priyadarshana – Research Officer attended the CIRDAP-MRRD Collaborative Training Programme on "Malaysia Technology Transfer Programme on Rural ICT" held in Malaysia, from 05 October – 12 October 2013.

Ms. A.M.S. Perera – Research Officer participated in the "Sixth South Asian Training Programme on CGE Modeling" held in Nepal, from 05 October – 12 October 2013.

Ms. M.K.N. Damayanthi and Ms. H.M.S.J.M. Hitihamu - 02 Research Officers attended the CIRDAP-NIRD International Training Programme on "GEO-Informatics Application in Rural Development for Sharing Innovative and Best Practices" held in India, from 21 October – 01 November 2013.

Participation at Local Training – Staff Officers

Ms. A.I. Pathirana – PA to Director, Mr. J.J.S. Jayamanna – Asst. Registrar (Administration) attended the "Proper Maintenance of Personal Files" held at PRAG Service (Pvt.) Ltd., from 22 – 23 January 2013.

Ms. A.I. Pathirana PA to Director, Mr. K.T.U. Kamburugoda – Accountant, Ms. Jeewani Nanayakkara – Asst. Accountant, Ms. N.C. Ekanayake – Internal Auditor attended the Awareness Programme on "Sri Lanka Public Sector Accounting Standards" held at Association of Public Finance Accountants., on 30 January 2013.

Ms. N.C. Ekanayake – Internal Auditor attended the Training Programme on "Internal Auditing" held at PRAG Service (Pvt.) Ltd., on 02nd April 2013.

Mr. K.T.U. Kamburugoda – Accountant, Ms. Jeewani Nanayakkara – Asst. Accountant, Ms. N.C. Ekanayake – Internal Auditor attended the Awareness Programme on "How to Minimize Audit Queries an Improve Public Accountability" held at Association of Public Finance Accountants., on 05th April 2013.

Ms. M.K.N. Damayanthi, Ms. J.A.U.P. Jayasinghe, Ms. R.M.M.H.K. Rambodagedera & Mr. H.A.C. Jayasooriya – 04 Research Officers attended the Workshop on "How to Write your Ph.D Thesis and Research Articles" held at Post Graduate Institute of Management, on 16 May 2013.

Mr. J.J.S. Jayamanna – Asst. Registrar (Administration) attended the "Concept of Power and Art of Leadership" held at National Institute of Labour Studies, on 31 July 2013.

Ms. R.Y.D.M.R.N.K. Rambukwella – Research Officer attended the meeting on "Improving Safety and Quality of Sri Lanka Fruits & Vegetables" held at the Ceylon Chamber of Commerce, on 12 July 2013.

Mr. S.T.G. Aravinda – Administrative Officer attended the programme on "Vehicle Maintenance" held at PRAG Service (Pvt.) Ltd., on 07 August 2013.

Ms. N.C. Ekanayake – Internal Auditor attended a Workshop on "Effective Presentation Skills for Enhanced Managerial Performance" held at Centre for Banking Studies, from 14 – 15 August 2013.

Ms. M.D. Susila Lurdu – Research Officer a Workshop on "Revisiting Traditional Knowledge" held at National Science Foundation, on 27 August 2013.

Mr. J.J.S. Jayamanna – Asst. Registrar (Administration) attended a Training Programme on "Salary Management & Salary Conversion" held at PRAG Service (Pvt.) Ltd., on 03 September 2013.

Mr. M.M.M. Aheeyar – Research Associate and Ms. G.G.de L.W. Samarasingha – Research Officer attended the "Further Earth Developing a Research Agenda for Sri Lanka" held at Galadari Hotel, from 17 – 18 September 2013.

Ms. S. Senanayake – Statistical Officer attended a short course on "Sampling Techniques, Survey Design & Analysis" held at PGIA, University of Peradeniya., from 4 – 6 September 2013.

Ms. G.G.de L.W. Samarasinha – Research Officer attended the "National Training on Forecast Translation" held at Department of Meteorology, from 9 – 11 October 2013.

Mr. K.T.U. Kamburugoda – Accountant, Ms. Jeewani Nanayakkara – Asst. Accountant, Ms. N.C. Ekanayake – Internal Auditor attended the "New Accounting Standards and Tax Changes" held at Association of Accounting Techniques Sri Lanka, on 07 October 2013.

Mr. K.T.U. Kamburugoda – Accountant, Ms. W.D.G. Perera – Accounts Officer, Ms. N.C. Ekanayake – Internal Auditor attended the "Training programme for Audit & Financial Officers"

held at Paddy Research & Development Institute, Batalagoda., from 31 October – 01 November 2013.

Mr. I.P.P.M. Wijesinghe – Research Officer, Mr. K.P.K.I.U. Fernando – Statistical Officer attended the Seminar on "Application of Forecasting Techniques" held at Institute of Applied Statistics, from 28 – 29 October 2013.

Mr. P.C.J. de Silva – Research Officer attended the "5 Day Workshop on Training the Trainer" held at Ministry of Youth Affairs, from 18 -22 September 2013.

Mr. M.M.M. Aheeyar – Research Associate attended a training programme on "Preparation of Greenhouse Gas (GHG) Inventory" held at Distance Learning Centre Ltd., on 30 October 2013.

Mr. M.M.M. Aheeyar – Research Associate attended the "VIII Monsoon Forum" held at Department of Meteorology on 06 December 2013.

Ms. J.A.U.P. Jayasinghe – Research Officer attended a Training programme on "Vulnerability and Adaptation Assessment" held at In-service Training Institute, on 12, 13, 17, 18, & 19 December 2013.

Ms. Jeewani Nanayakkara – Asst. Accountant, Ms. N.C. Ekanayake – Internal Auditor attended a seminar on "How to Prepare Financial Statements based on New Public Sector Accounting Standards" held at Ministry of Youth Affairs & Skill Development, from 9 – 10 December 2013.

Mr. H.J.C. Jayasooriya – Research Officer attended a Training programme on "Vulnerability and Adaptation Assessment" held at IWMI, on 20 December 2013.

Training Programme for All Staff – All staff attended a training programme on "Improvement of Employees Effectiveness & Efficiency" held at HARTI on 13, 17 & 20 December.

Participation at Local Training – Non Staff Members

I. Proper Maintenance of Personal Files (02)
II. Sri Lanka Public Sector Accounting Standards (01)
III. How to Minimize Audit Queries an Improve Public Accountability (01)
IV. Vehicle Maintenance (01)
V. Salary Management & Salary Conversion (02)