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நிர்வாக அறிக்கை

2012

ADMINISTRATION REPORT

අපනයන කෘෂිකර්ම දෙපාර්තමේන්තුව

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ஏற்றுமதி விவசாயத் திணைக்களம்

சிறு ஏற்றுமதிப் பயிர் ஊக்குவிப்பு அமைச்சு

Department of Export Agriculture

Ministry of Minor Export Crop Promotion

web- www.exportagridept.gov.lk

2012

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Department of Export Agriculture
Ministry of Minor Export Crop Promotion

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වැඩි විදේශ විනිමයක් ඉපයීමත්, අපනයන කෘෂි බෝග ක්ෂේත්‍රයේ නිරත සියලු පාර්ශවකරුවන්ගේ තිරසාර ආර්ථික හා සමාජීය සංවර්ධනයත් පෙරදැරි කර ගනිමින්, පරිසරය සුරැකෙන අයුරින් අපනයන කෘෂි බෝග නිෂ්පාදනවල ප්‍රමාණාත්මක හා ගුණාත්මක ප්‍රවර්ධනයක් ඇති කිරීමට අවශ්‍ය වන්නාවූ පර්යේෂණ හා සංවර්ධන ක්‍රියාවලිය සැලසුම් කිරීම හා ක්‍රියාත්මක කිරීම.

எமது தொலைநோக்கு

"வாசனைத் திரவியங்களுக்கும் அதனுடன் இணைந்த உற்பத்திகளுக்கும் ஏற்றுமதியில் சிறப்பிடம்"

எமது குறிக்கோள்

"உயர் அந்நியசெலாவணி வருவாயைப் பெறுவதுடன், ஏற்றுமதி விவசாயத்துறையில் ஈடுபட்டிருக்கும் அனைவரினதும் பொருளாதார, சமூக அபிவிருத்திக்கு முன்னுரிமை வழங்கி, சூழல் பாதுகாப்பை உறுதி செய்து, ஏற்றுமதி விவசாய உற்பத்திகளின் அளவையும் தரத்தையும் உயர்த்துவதற்குத் தேவையான ஆராய்ச்சி, அபிவிருத்தி நடவடிக்கைகளைத் திட்டமிடலும் நடைமுறைப்படுத்தலும்"

OUR VISION

"Excellence in Exports of Spices and Allied Products"

OUR MISSION

"Planning and Implementation of an appropriate Research and Development Programme with the prime objective of earning more foreign exchange through enhancement of quality and quantity of Export Agricultural Crop production for sustainable development of economic and social standards of all the stakeholders of the Export Agricultural Crop sector while ensuring the safeguards to environment"

ACKNOWLEDGEMENT

It is a great pleasure to extend my sincere gratitude to all Heads of Divisions of the Department of Export Agriculture for the contribution they rendered to complete this administration report.

I wish to acknowledge the input of the Additional Director General(Research and Development), Director(Administration),Directors(Research),Directors(Development),Director(Regulation), Accountant, Research Officers in charge of the Sub Research Stations and the Economic Research Unit for their commitment to provide necessary information. The contribution made by the staff of the Communication Unit for the preparation of the cover page and printing of the report is appreciated.

Contribution of Miss. A.P.P. Disna (Director – Regulation) to make this report a success is highly appreciated. I am also grateful to Mrs. G.D.N. Siriyalatha for the support she rendered in providing the necessary data to be included in the report. I wish to convey my sincere thanks to Mrs. G.E.M.A.K. Dissanayake (Assistant Director, Planning) for her commitment to gather the required data and compile the information in this document. Contribution from Mrs. R. P. Chathumini Ranasinghe (Translator) to make this report available in time and attractive also is highly appreciated.

W.D.L Gunaratne

Director General,

2013.10.02 Department Of Export Agriculture

Contents

Figures

ABBREVIATIONS

AD	-	Assistant Director
COP	-	Cost of Production
CRS	-	Cinnamon Research Station
DEA	-	Department of Export Agriculture
DS	-	Divisional Secretary
EAAS	-	Export Agricultural Assistance Scheme
EAC	-	Export Agricultural Crops
EO	-	Extension Officer
ERP	-	Eppawala Rock Phosphate
FSA	-	Farmer Service Assistance
GAP	-	Good Agricultural Practices
GN	-	Grama Niladari
Ha	-	Hectare
HQEO	-	Head Quart Extension Officer
HRD	-	Human Resource Development
IBRS	-	Inter Cropping & Betel Research Station
IPC	-	International Pepper Community
IRP	-	Imported Rock Phosphate
NARP	-	National Agriculture Research Policy
PHASU	-	Post Harvest Advisory Service Unit
PIP	-	Productivity Improvement Programme
R & DA	-	Research & Development Assistance
RO	-	Research Officer
VP	-	Vegetative Propagated
VAM	-	Vesicular Arbuscular Micorhiza

FORWARD BY THE DIRECTOR GENERAL OF EXPORT AGRICULTURE

The mission of the Department of Export Agriculture (DEA) is to increase foreign exchange earnings from Export Agricultural Crops (EAC) through increasing production, productivity, improved product quality and enhancing the value addition capacity. A considerable growth has been noted in both exports volume and export earnings during the year 2012 in comparison to the previous year. This sector which comprises of Spices, Beverages, Industrial, Essential oil and Stimulant crops of perennial nature (other than tea, Rubber, Coconut and Cashew) contributes to an average share of over 12.0 % of the all Agricultural and Plantation sector export earnings during the reporting year, 2012. The DEA, under the supervision of the Ministry of Minor Export Crops Promotion, has planned and implemented its Research and Development programmes in 2012 to achieve the mandated objectives. This year is one of the most prominent years for almost all the EACs. Farm Gate Prices of Cinnamon, Pepper, Clove, Nutmeg and Mace have increased impressively over 2011 except for Cardamom and Betel.

As a policy, the DEA paid more attention to increase the production, productivity and to improve the quality of the products in order to meet the international standards and trade regulations, which enable to compete with other producing countries. In order to cater to the worlds consumer needs of hygienically safe and superior in quality were given more emphasis. For these new challenges DEA continued its efforts in 2012 under the theme of "**A Better quality Product**", to ensure the implementation of food safety standards in the domestic production system, while promoting Good Agricultural Practices (GAP) and Good Manufacturing Practices (GMP).

During 2012 the Department organized two important events jointly with the Ministry of Minor Export Crops. Annual session of the International Pepper Community was held in Mount Lavinia, Colombo. Over 350 delegates including 187 foreign delegates participated in the meeting. First Annual Symposium of Minor Export Crops (ASMEC) was held in Peradeniya.

This report summarizes the overall performance and related information pertaining to the four sub-divisions of the Department under the Director General of the Department of Export Agriculture namely Research, Development, Administration and Finance. It includes all activities of the department, strategies used to meet the desired goals and the progress achieved during the year 2012.

GENERAL INFORMATION -2012

- **Growth of the EAC sector in 2012**
  - Contribution to GDP – 0.5%
  - Contribution to export earnings of agriculture – 12.0%
  - Export volume (Mt) – 37,528
  - Export Value (Rs.mn.) - 35,321.5
  - Estimated EAC extent (ha) –106,232 (with ginger & turmeric)

- **District offices, Research stations and Nurseries of the Department**

A. District Offices -14 (Distributed in the following districts.)

Central Province	-	Kandy, Matale & Nuwara-eliya
Sabaragamuwa Province	-	Kegalle & Ratnapura
Uva Province	-	Badulla & Monaragala
Southern Province	-	Galle, Matara & Hambantota
Western province	-	Colombo, Kalutara & Gampaha
North Western Province	-	Kurunegala

B. Research Stations and Sub-Units

1. Central Research Station, Matale
2. Cinnamon Research Station at Pallolpitiya, Thihagoda, Matara
3. Intercropping and Betel Research Station, Dampelassa, Narammala
4. Economics and Market Research Unit, Head Office, Peradeniya
5. Mid Country Research Station, Delpitiya
6. Tissue Culture Unit & Plant Nursery, Walpita
7. Kundasale Research Sub-Unit
8. Nillambe Research Sub-Unit

C. Department Plant Production Nurseries

Kurunegala District	-	Serapies Plant Nursery - Polgahawela, Holongolla Plant Nursery - Dodangaslanda, Wennoruwa Plant Nursery – Narammala
Nuwaraeliya District	-	Blackwater, Plant Nursery - Ginihaththena & Mulhalkele, Plant Nursery – Walapane
Matale district	-	Central Plant Nursery – Elwela
Matara district	-	Central Plant Nursery - Mapalana, Kamburupitiya
Kegalle District	-	Central Plant Nursery – Gasnawa
Gampaha District	-	Central Plant Nursery – Walpita

1. Functions of the Department of Export Agriculture

1.1 Role and objectives

The major responsibility of the Department of Export Agriculture (DEA) is to develop the EAC sector in order to earn more foreign exchange by increasing the export volume and improving the quality of the products. As officially defined, the perennial crops, of which over 50% of the annual production is exported (excluding tea, rubber, coconut and cashew) and any other crop that is named by the Minister in-charge to be brought under the purview of the department are classified as EACs. As to this classification DEA's main emphasis is to improve traditional crops such as Cinnamon, Pepper, Clove, Nutmeg, Cardamom, Coffee, Cocoa, Betel, Arecanut, Vanilla, Citronella, Lemon Grass, Garcinia (goraka), Kithul, Ginger and Turmeric. The DEA is basically a technical Department and its functions are focused on Research and Development activities of the EAC sector.

1.2 Major Functions

The Promotion of Export Agriculture Crops Act no. 46 dated 22nd September, 1992 of Parliament of the Democratic Socialist Republic of Sri Lanka, embodies and gives statutory status to the functions and services mentioned below.

- Organizing and promotion of cultivation and processing of EACs
- Undertaking multidisciplinary research on crop improvement, crop husbandry, crop protection, post harvest handling and socio economics
- Production and supply of quality planting material
- Implementation of EAC assistant schemes on crop production, productivity improvement and quality improvement
- Providing crop protection advisory services
- Promotion of Integrated Pest Management
- Promotion of Integrated Plant Nutrient Management
- Promotion of Organic Farming
- Dissemination of information on marketing, quality standards, Prices etc.
- Control of importation of EAC products, planting materials etc.
- Training of personals involved in EAC production, processing & trading and other stakeholders
- Providing advisory services for the promotion of EACs in estate sector

- Strengthening of the linkage among public and private organizations involved with EACs
- Executive authority under the Export Agriculture Act No. 46 of 1992
- Contributing towards EACs related policy matters in other governmental organizations
- Technology demonstrations

1.3 Important Events of 2012

- 40th Annual Session of International Pepper Community

The 40th annual session of the International Pepper community consisting of major pepper producing countries, namely, India, Brazil, Malaysia, Indonesia, Vietnam and Sri Lanka as permanent members and Madagascar, Papua New Guinea and China as associate members, was held at Mt. Lavinia Hotel, Colombo from 30th October to 02nd November 2012. This conference was held under the patronage of Hon. Minister of Economic Development, Basil Rajapakse and Hon. Minister of Minor Export Crop Promotion, Reginald Coorey. The conference proceeded in making important decisions on the advancement of Pepper Industry at international level. It was attended by 187 foreign delegates and 77 local delegates.

- Annual Symposium on Minor Export Crops

The Annual Symposium on Minor Export Crops was held for the first time in 2012. In this first ever symposium on minor export crops in Sri Lanka, the results of all the research conducted on the sector were compiled into a proceeding and was presented to the stakeholders for feedback. The symposium was held on 16th and 17th of August at Plant Genetic Resource Centre and a decision was made to hold the symposium on a yearly basis henceforth.

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நிர்வாகம்

ADMINISTRATION

2. ADMINISTRATION DIVISION

Being headed by the Director of Administration, the Administration Division of the Department assists the Director General of Export Agriculture in the management of human and physical resources which include new recruitments, promotions and transfers, human resource development, disciplinary procedures and matters related to departmental examinations, procurement and maintenance of capital assets of the department. Besides, the major responsibilities, the division handles the welfare services and related activities for the motivation and welfare of the staff, as and when required. The organizational chart of the DEA is given in annexure VI.

The approved cadre of the department was amended as per the letter no: DMS/1 dated 12.01.2012 issued by the Department of Managerial Services regarding to the Restructuring Process of the Department of Export Agriculture. Accordingly, approved cadre, number of employees in service as at 31.12.2012 and vacancies prevalent at same is depicted in the table 2.1.1.

2.1 Staff

The distribution of the approved cadre and number of employees in service are given in table 2.1.1.

Table 2.1.1 Distribution of Cadre as at 31st of December 2012

No	Designation	Service & Grade	Salary Code	No. Approved	Number in service as at 31.12.2012	Vacancies
01	Director, General	Sri Lanka Scientific Service	SL 3-2006	01	01	-
02	Additional Director General	Sri Lanka Scientific Service	SL 3-2006	02	-	02
03	Director	Sri Lanka Scientific Service 1	SL 1-2006	07	-	07
04	Director (Administration)	Sri Lanka Administrative Service1	SL 1-2006	01	01	-
05	Chief Accountant	Sri Lanka Accounting Service -1	SL 1-2006	01	01	-
06	Statistician	Departmental	SL 1-2006	01	01	-
07	Deputy Director/ (Administration)	Sri Lanka Administrative Service 11/111	SL 1-2006	01	-	01
08	Deputy /Assist. Director (R&D)	Sri Lanka Scientific Service 11/111	SL 1-2006	67	41	26
09	Accountant	Sri Lanka Accounting Service 11/111	SL 1-2006	01	01	-
10	Internal Auditor	Sri Lanka Accounting Service11/111	SL 1-2006	01	-	01
11	Assist. Director (Planning)	Sri Lanka Planning Service 111	SL 1-2006	01	01	-
12	Assist. Director (Development)	Departmental	SL 1-2006	01	01	-

No	Designation	Service & Grade	Salary Code	No Approved	Number in service as at 31.12.2012	Vacancies
13	Administrative Officer	Public Management Assist. Service (Supra)	MN7-2006A	03	03	-
14	Translator	Government Translator Service	MN 6-2006A	02	01	01
15	Research and Development Assistant	Allied Services	MN 4-2006A	84	64	20
16	Development Assistant	Allied Services	MN 4-2006A	19	18	01
17	Development Officer	Allied Services	MN 4-2006A	411	-	411
18	Budget Assistant	Allied Services	MN4-2006A	01	01	-
19	Extension Officer	Sri Lanka Technological Service	MN 3-2006A	190	141	49
20	Research Assistant	Sri Lanka Technological Service	MN 3-2006A	25	09	16
21	Technical Officer	Sri Lanka Technological Service	MN 3-2006A	01	-	01
22	Librarian	Sri Lanka Librarian Service	MN 3-2006A	03	01	02
23	Farmhouse Manager	Sri Lanka Technological Service	MN 3-2006A	10	-	10
24	Management Assistant	Public Management Assistant Service	MN 2-2006A	83	73	10
25	Computer data entry operator	Combined Service	MN 1-2006A	01	01	-
26	Farm Service Assistant	Departmental	MN 1-2006A	13	13	-
27	Warden	Departmental	MN 1-2006A	01	01	-
28	Drivers	Combined Drivers' Service	PL 3-2006A	61	54	05
29	Tractor Driver	Departmental	PL 2-2006A	02	-	02
30	Mason	Departmental	PL 2-2006A	01	01	-
31	Spray Machine Operator	Departmental	PL 2-2006A	02	02	-
32	Budder	Departmental	PL 2-2006A	01	01	-
33	Plumber	Departmental	PL 2-2006A	01	01	-
34	Nursery Keeper	Departmental	PL 2-2006A	02	02	-
35	Cook	Departmental	PL 2-2006A	01	01	-

No	Designation	Service & Grade	Salary Code	No: Approved	Number in service as at 31.12.2012	Vacancies
36	Office Employee Assistant	Departmental	PL 1-2006A	35	33	02
37	Watcher	Departmental	PL 2-2006A	47	37	10
38	Lorry Cleaner	Departmental	PL 1-2006A	07	07	-
39	Driver Assistant	Departmental	PL 1-2006A	01	01	-
40	Labourer	Permanent Contract basis	PL 1-2006A PL 1-2006A	190 97	174 130	16 (-33)
41	Circuit Bungalow Keeper	Departmental	PL 1-2006A	02	-	02
Total				**1,363**	**689**	**608**

2.2 Senior Managerial Positions of the Department

Director General	- Mr. W.D.L. Gunaratne
Additional Director General, (Research) Acting	- Dr.W.W.P.W.M.R.S. Kularathne
Additional Director General, (Dev.) Acting	- Mr. N.K.A. Rupasinghe
Director (Administration)	- Mr. Janaka Darmakeerthi
Chief Accountant	- Mr. R.M.K. Rajapakse
Accountant	- Mr. R.M.D.S.S. Rathnayake
Director (Development) I	- Dr. M.A.P.K. Senevirathne
Director (Development) II	- Mrs. Shantha Senevirathne
Director (Development) III	- Mr. M.W. Girihagama
Director (Regulation)	- Ms. A.P.P. Disna
Director (Research)	- Dr. A.P. Heenkenda
Director (Research)	- Dr. H.A. Sumanasena
Director (Research)	- Mr. K.G.G. Wijesinghe

- **New Recruitments**

Assistant Director (S.L.S.S)	01
Cook	01
Labourer (III)	05

- **New Arrivals**

Director (Administration)	01
Assistant Director (Planning)	01
Administrative Officer	01
Development Assistant	01
Research and Development Assistant	01
Management Assistant	15
Drivers	05
Office Employee Service	06

- **Transfers**

Director (Administration)	01
Research and Development Assistant	01
Management Assistant	06
Drivers	07
Office Employee Service	06

- **Retirements**

Director (Development)	01
Research Officer	01
Extension Officer	10
Management Assistant	07
Cook	01
Watcher	02
Office Employee Service	02
Labourer	18

- **Deaths**

Extension Officer	01

- **Vacation of Post**

Office Employee Service	01

2.3 Departmental Examinations - 2012

	Examination	Date
01	Departmental Examination for Class II/ Grade I Officers of Sri Lanka Scientific Service	03.05.2012
02	1st Departmental Examination for officers of Sri Lanka Technological Service	03.05.2012
03	2nd Departmental Examination for officers of Sri Lanka Technological Service	03.05.2012
04	1st EB Examination for Research & Development/Development Assistants	06.12.2012
05	2nd EB Examination for Research & Development/Development Assistants	15.11.2012
06	EB Examination of Drivers' Service	22.12.2012
07	EB Examination of Office Employee Service	In March & Oct. 2012
08	EB Examination of Labourer/Watcher and allied Services	19.12.2012
09	National Language Test	30.05.2012 20.12.2012

Table 2.4. Foreign Scholarships & Travelling - 2012

	Name & Designation	Reason	Period	Country
01	Mr. W.D.L. Gunaratne, (Director General)	01. To participate in the Research & Development Committee meeting on International Pepper Community 02.Identification and Transfer of Pepper germplasm and Pepper technology	2012.09.09 – 09.12 2012.07.09 - 07.16	India Madagascar
02	Dr.W.P.M.R.S. Kularatne (Ad. Dir. Gen. -Research)	Workshop on pest management in pepper cultivations	2012.08.05 – 08.10	Vietnam
03	MR. N.K.A. Rupasinghe (Ad. Director General - Development)	-do-	2012.08.05 – 08.10	Vietnam
04	Mr. M.W. Girihagama (Director - Development)	-do-	2012.08.05 – 08.10	Vietnam
05	Dr. H.A. Sumanasena (Director -Research)	-do-	2012.08.05 – 08.10	Vietnam
06	Ms. A.P.P. Disna (Director -Regulations)	To represent the Department in the Brazil tour of the Minister of Minor Export Crop Promotion	2012.10.21 – 10.28	Brazil
07	Dr. A.L.S. Dharmaparakrama (Research Officer)	To take part in a veterans' conference on Areca	2012.12.24 – 12.30	China
08	Dr. M. Dharmadasa (Research Officer)	International Pepper Community - Meeting on quality of pepper products	2012.06.04 – 06.05	Indonesia
09	Mr. A.D.D. Roshika (Research and Development Assistant)	Technical training on Oil Crops	2012.03.28 2012. 05.30	China
10	Mr. E.D.K. Edirisinghe (Res. Assistant)	Laboratory Analysis	2012.09.02 – 09.08	India
11	Mr. V. Chandrasekaran Pillai (Res. Assistant)	Laboratory Analysis	2012.09.02 – 09.08	India

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நிதி

FINANCE

3. FINANCE DIVISION

An appropriation of Rs. 559.96M was allocated by the government of Sri Lanka under the 289th expenditure head in one programme, for two recurrent expenditure projects and two capital expenditure projects for the fiscal year 2012. (Table 3.1) In addition to the above appropriation, the Ministry of Economic Development allocated a sum of Rs. 25.5M for the department under 'Divi Neguma' Programme Fund during the period under review.

Total allocation of treasury funds for development in year 2012 has increased by Rs. 17M over 2011. The expenditure for the year was 89.38% (Rs 500.4M) from the total appropriation. The financial performances of project 1 and 2 for the year had been 95.28% and 73.49% respectively, of the appropriation. Percentages of the amount spent under capital expenditure of the projects 1 and 2 for 2012 had been 96.85% and 62.58% respectively, and the same for the recurrent expenditure had been 93.65% and 76.72%. Despite the severe dearth of manpower in technical cadre at field levels and the financial constraints, disbursement of 89.38% of the total annual allocation for the year 2012 could be considered as an impressive achievement.

3.1. Internal Audit Inspection in 2012

Internal Audit unit of the Department is operated under the Director General. Eighteen Stations including Research stations, Assistant Directors' Offices and Nurseries of DEA were audited by Internal Audit unit during the year 2012.

Table 3.1 : Financial Provisions and Expenditure – 2012

Head - 289 Programme - 02 Project - 01 - Export Crops Development			
Item	**Provision(Rs)**	**Expenditure (Rs)**	**Expenditure (%)**
Capital Expenditure			
Rehabilitation and improvement of capital Assets	13,200,000	7,946,70	60.20
Acquisition of fixed Assets	9,000,000	7,841,373	87.13
Capital Transfers			
Development Assistance(Assistance scheme for export agricultural crops)	184,700,000	184,671,879	99.98
Training and capacity Building	1,000,000	891,423	89.14
Total Capital Expenditure Recurrent Expenditure	207,900,000	201,351,378	96.85
General Administration	200,300,000	187,589,923	93.65
TOTAL EXPENDITURE	**408,200,000**	**388,941,301**	**95.28**
Project 02 – Multidisciplinary research integrated pest & Disease management of EAC			
Capital Expenditure			
Rehabilitation and improvement of capital Assets	5,500,000	3,132,088	56.95
Acquisition of fixed Assets	21,000,000	11,376,821	54.18
Human Resource Development	600,000	336,951	56.16
Specific Research Projects	7,500,000	6,808,075	90.77
Total Capital Expenditure Recurrent Expenditure	34,600,000	21,653,935	62.58
General Administration	117,160,000	89,879,403	76.72
TOTAL EXPENDITURE (Project ,II)	**151,760,000**	**111,533,338**	**73.49**
TOTAL EXPENDITURE (Projects I&II)	**559,960,000**	**500,474,639**	**89.38**
Special Allocations (Divineguma Programme)	25,500,000	17,609,802	69.06

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அபிவிருத்தி

DEVELOPMENT

4. DEVELOPMENT DIVISION

4.1 Introduction

The Development Division plays a significant role in the Department to provide technical advice and guidance, planting materials and cash grants for the promotion of EAC sector. The division is headed by Additional Director General (Development) supported by three Directors (Development), assigned with two provinces for each, for the management and implementation of EAC development programme. Assistant Directors attached to the respective districts, Extension Officers in-charge of the Extension Officer ranges and Research and Development/Development Assistants attached to the division as a supportive staff to continue the functions of the Development division. The major functions of the Development Division are given below.

4.2. Crop Development Programme

The total estimated area under EAC was approximately 106,232 ha as at December 2012. The following major programmes were carried out by the Development Division.

(i) New /Replanting Programme

(ii) Productivity Improvement Programme

(iii) Post Harvest Technology and quality improvement programme of EACs.

Extension and Training of Stakeholders were carried out as a tool of popularising those three major development programmes.

The development activities and services of the division are mainly focused on the wet and intermediate climatic zones of Sri Lanka covering 14 districts, namely, Kandy, Matale Nuwara-Eliya, Kurunegala, Colombo, Kalutara, Gampaha, Galle, Matara, Hambantota, Kegalle, Ratnapura, Badulla and Moneragala. In addition several development activities are carried out to introduce and popularize Turmeric, Ginger, Arecanut, Pepper and Cocoa in non-traditional areas like Puttalam, Anuradapura, Polonnaruwa and Ampara Districts. The special programmes such as post harvest advisory services, plantation advisory services and plant certification for quality assurance of plants and planting material, cultivation of EAC in selected village as cluster farms, were also implemented during the year 2012.

4.3. Export Agriculture Assistance Scheme (EAAS) for new planting

This scheme was introduced in 1972 with the inception of the Department. In addition to issuing free planting materials and provision of technical information, this scheme provided outright cash grants for successfully established cultivations at maturity. However, due to several reasons including precedence of the department this assistance scheme has been subjected to revision

several times. EAC Assistance Scheme currently being implemented for new planting programme is given below (table 4.3.1).

New planting scheme was confined to economically important crops in the long-run and newly planted extents under this programme in 2011 and 2012 are given in table 4.3.2.

Table 4.3.1 EAC Assistance Scheme for New Planting

Crop	Crop spacing	Free plants issued per Hectare	Investment Assistance per Hectare (Rs.)	Minimum period of investment Assist.(Yrs)	Maximum period for Qualifying for Investment Assist.(Yrs)
Catimor Coffee	1.8x1.8 m	3000	35,000.00	03	05
Arabica Coffee	1.8x1.8 m 1.8x2.5 m	3000 2200	35,000.00	03	05
Robusta Coffee	3.0x3.0 m	1100	20,000.00	03	05
Cocoa	3.0x3.0 m	1100	40,000.00	03	05
Cinnamon	1.2x0.9 m 1.2x0.6 m	9000 14000	20,000.00	02	05
Black Pepper	2.4x2.4 m	1750	25,000.00	03	05
Cardamom	2.0x2.5 m	2000	35,000.00	03	05
Clove	6.0x6.0 m	250	10,000.00	04	06
Nutmeg	6.0x6.0 m	250	15,000.00	04	06
Vanilla	2.4x1.5 m	2750	5,000.00	03	05
Citronella	0.9x0.9 m 0.6x0.6 m	17500 30000	10,000.00	8 Month	02
Lemon grass	0.6x0.6 m	30000	10,000.00	8 Month	02

Table 4.3.2 Extents Cultivated under New Planting Program in 2011 and 2012

Crop	Cinnamon	Pepper	Coffee	Cocoa	Cardamom	Citronella & Lemon Grass	Clove & Nutmeg	Vanilla	**Total (ha)**	Betel (plants),000	Ginger	Turmeric	Mixed (garden)	Arecanut (Plants), 000
Extent (ha) 2012	1047	626	70	174	7	3	128	16	**2071**	63.85	158	62	168	2 70.5
Extent (ha) 2011	1248	610	113	114	70	38	123	24	**2340**	16.00	762	227	607	387.68

Number of applications received and land inspections completed under new cultivation programme have been summarized in table 4.3.3.

Table 4.3.3 Applications received and land inspected in the New planting Programme 2012

Crops	No of Application received	No of Application Qualified	Extent planted	Inspections(after new Planting)					
				1st Successful Inspection		2nd Successful Inspection		4th Successful Inspection	
	No:	No:	Ha.	No:	Ha.	No:	Ha.	No:	Ha.
Cinnamon	6162	1546	1067.6	3571	1340	2265	928	846	810
Pepper	9813	1894	708	4260	1030	2524	588	544	148
Cardamom	73	7	6.85	24	22.8	2	1.2	25	10.4
Coffee	502	100	74.33	201	86.65	198	61.6	92	38
Cocoa	805	460	174.9	260	114	199	79.35	16	4.8
Clove	136	75	82.7	92	41.6	38	20.1	8	9.75
Nutmeg	438	215	55.8	266	86.7	136	30.0	29	7.65
Vanilla	145	24	15.58	77	16.9	7	0.1	1	.2
Citronella	44	26	2.72	29	11.4	28	12.4	23	9.5
Arecanut	822	458	245.9	531	171.9	112	64.4	23	7
Ginger	1665	723	157.6	490	66.8	-	-	-	-
Turmeric	673	168	62.56	141	17.3	-	-	-	-
Total	**21278**	**5696**	**1654.75**	**9942**	**3005.85**	**5509**	**1785**	**1607**	**1045**

4.4. Productivity Improvement Programme

Opportunities to expand Export Agriculture Crops to new lands are limited. Therefore, Productivity Improvement Program (PIP) was introduced to increase the per unit area production of the existing EAC cultivations, where production is below the potentials due to low crop density and poor crop management. Growers are assisted with technical advice, supplying of free planting materials to fill vacancies, offering cash grants for a period of three years in order to improve the existing pepper, cinnamon, cocoa, coffee, clove and nutmeg cultivations. Adoption of agronomic practices such as filling vacancies, proper soil conservation measures, crop and shade tree pruning, application of organic manure and integrated pest management are required to qualify under the assistance scheme.

Table 4.4.1 Assistance Scheme for Productivity Improvement Programme. (Cash grant per Hectare for each Crop in Rs.)

Crop	1st Year	2nd Year	3rd Year
Cinnamon	15,000	15,000	7,500
Black pepper	15,000	15,000	7,500
Cocoa	12,000	12,000	6,000
Coffee	12,000	12,000	6,000
Clove	6,000	6,000	3,000
Cardamom	12,000	12,000	6,000
Nutmeg	6,000	6,000	3,000

Progress of the extent developed under PIP is given in the table 4.4.2 in year 2012.

Table 4.4.2 The Extent(Ha) developed under productivity improvement programme in different District

District	Cinnamon	Pepper	Coffee	Cocoa	Cardamom	Clove	Nutmeg	Total
Kurunegala	68.7	173.2	1.8	10.4	-	11.2	3.7	269.0
Matale	27.3	119.7	2.4	18	-	9.6	0.8	177.8
Kandy	5.7	207.7	12.2	9.6	2.2	42.9	23	303.3
Nuw' Eliya		27.2	0.4	-	4	0.6	-	32.2
Badulla	27.8	39.7	2	-	-	-	-	69.5
Monaragala	4.4	136.6	-	22.4	-	-	-	163.4
Hambantot a	66.4	14.8	-	-	-	-	-	81.2
Matara	105.6	-	-	-	5	-	-	110.6
Galle	84.6	1.92	-	-	-	-	-	86.52
Kalutara	45.6	-	-	-	-	-	-	45.6
Colombo	21.9	6.2	-	-	-	-	-	28.1
Gampaha	7.2	45.6	-	-	-	-	-	52.8
Kegalle	7.4	77.1	16.2	-	-	0.6	-	101.3
Ratnapura	28.5	16.5	-	-	-	-	-	45
Total	501.1	866.22	35	60.4	11.2	64.9	27.5	1,566.32

The summary of the progress of Productivity Improvement Programme in 2012 is given in table 4.4.3

Table 4.4.3. The extent of EAC developed under Productivity Improvement Programme

Crop	Cinnamon	Pepper	Coffee	Cocoa	Cardamom	Clove	Nutmeg	**Total**
Extent Developed (ha)	501.1	866.2	35	60.4	11.2	64.9	27.5	**1,566.3**

4.5. Estate Sector Crop Development Programme

Estate sector development programme was introduced in 1998 with the objective of expansion of EAC cultivations to larger estates by utilizing the available resources of the sector. Special emphasis were given for crop diversification program with EACs in plantation sector to optimize the profit and minimize risk. Estate management was helped to plan their EAC development programs by senior officers of the department including researchers, whenever necessary. The following table shows the extent cultivated under the estate sector development programme in 2012

Table 4.5.1 Extent of Crops developed under Estate Sector Development Programme in 2012

District	**Crop (ha)**				
	Cinnamon	**Black Pepper**	**Coffee**	**Cocoa**	**Other crops**
Galle	24.0	-	-	-	-
Kurunegala	4.5	2.0	-	-	2.8
Matale	4.4	12.7	1.6	1	5
Badulla	24.6	26.2	-	9.5	9.7
Nuwara-Eliya	5.1	1.0	20.8	-	5.6
Ratnapura	58.7	-	-	-	3.6
Other Districts	61.3	7.1	4.1	3.4	20.4
Total	**182.6**	**49**	**26.5**	**13.9**	**46.6**

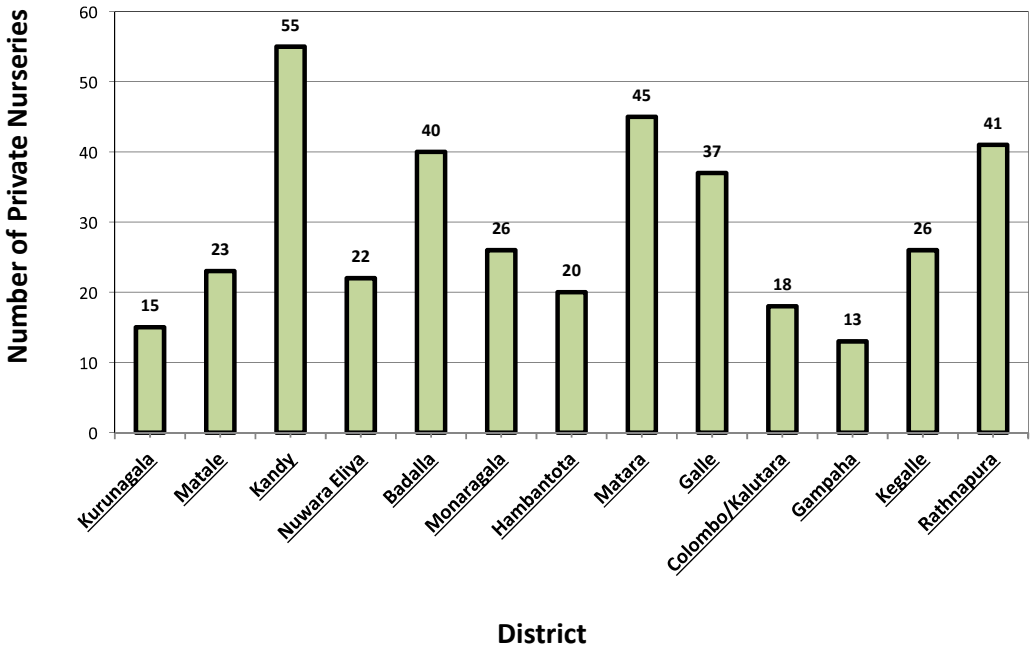
4.6. Production and Issuing of Planting Material

The objective of this program is to issue quality planting material for new planting and PIP programmes. Planting materials are provided free of charge to all farmers who were qualified under the development assistance scheme and successfully completed the land preparation, soil conservation and other field operations as per the instructions given by department officers. Planting materials were raised in nine nurseries managed by the department (table 4.6.1) and registered private nurseries under the close supervision of extension staff of the department. There were 374 private nurseries registered with the department during the year 2012. The distribution of private nurseries is shown in (Figure 4.6.2). The same nurseries were used to produce the planting material requirements for "Divineguma" and other national development programmes.

Table 4.6.1 Department Plant Nurseries in different Districts

District	Government Nurseries
Kurunegala	03
Matale	01
Nuwara-Eliya	02
Matara	01
Gampaha	01
Kegalle	01
Total	**09**

Figure 4.6.2. Distribution of Private Nurseries island-wide



Prices of the planting materials were revised with effect from 20.08.2012 and the new prices are given in table 4.6.3

Table 4.6.3 Prices of Seeds and Planting material (Rs)

Crop	Seed material(Rs.)	Planting Material (Rs.)
Cocoa	20.00 per pod	Plant 10.00
Pepper	0.20 per 3 node cutting	Plant 16.00
Coffee	80.00per kg. of ripped fresh berries Parchment, dry coffee beans 150.00	Plant 10.00
Cinnamon	80.00 per kg of seeds	Plant 9.00
Cardamom	-	Sucker 10.00
Areca nut	2.00	Plant 9.00
Vanilla	5.00 per 1m cutting	
Clove		Large Plant 40.00
Nutmeg	5.00 per seed	Large 60.00
Garcinea		Budded 80.00 Seedlings 15.00
Kitul		Large 10.00 Small 4.00
Citronella		0.75 per sucker
Lemongrass		0.75 per sucker

4.7. Plant Certification Programme

To ensure the supply of quality planting material through EAC development programme, a team of officers consisting of a Director, District AD and/or RO and an Extension Officer, or officer appointed by the Director General visited each nursery and plant certification is performed using the guidelines introduced by the Department.

Table 4.7.1 Details of the Plants Certified and issued in 2012

Crop	Total Number of Plants Produced	Number of Plants (Certifieed-2012)
Pepper	3,052,016	1,608,060
Coffee	357,675	216,318
Cocoa	157,200	200,862
Cinnamon	12,879,660	12,189,919
Areca nut	688,030	413,123
Clove	40,875	20,957
Nutmeg	50,875	32,794
Grand total	**17,226,331**	**14,682,033**

4.8. Issuing of Plants under the Export Agriculture Assistance schemes

Table No 4.8.1 depicts details on plants issued under the assistance schemes during 2012.

Table 4.8.1 Issuing of Planting Material (in Numbers)

Crop	New Planting	Other	Total
Cinnamon	8,457,710	3,732,209	12,189,919
Cardamom	11,725	-	11,725
Pepper	1119,736	488,324	1,608,060
Coffee	102,880	113,438	216,318
Cocoa	184,697	16,165	200,862
Citronella	29,700	-	29,700
Arecanut	292,385	120,738	413,123
Clove	9,625	11,332	20,957
Nutmeg	17,005	15,789	32,794
Betel	63,850	-	63,850
Total	**10,289,313**	**4,497,995**	**14,787,308**

4.9. Development of other Export Agricultural Crops

Other than the main crops mandated to DEA, the department is dealing with certain crops which have a potential for enhancing foreign exchange earnings. Crops identified under this programme were Vanilla, Lemongrass, Garcinia (goraka) and Kithul. In addition, Ginger and Turmeric were included in this category in 2007. The program is being continued during the year 2012 and planting materials and necessary technical advice were provided to relevant farmers under this programme.

Table 4.9.1 Progress of the Vanilla Cultivation Programme in Major Growing Areas

District	Number of Cuttings distributed
Matale	5,600
Kurunegala	14,525
Other Districts	7,175
Total	**27,300**

During the reporting year, 665,023 kg of Ginger and 151,680 kg of Turmeric seed tubers were distributed among the growers.

4.10. Export Agriculture Assistance Scheme for Post Harvest Development Activities

Post Harvest Advisory Service Unit (PHASU) initiated in 1998 to upgrade the quality of the Export Agricultural products was continued during the reporting year too. The Investment assistance scheme for post harvest practices was revised in 2007 and three packages suitable for stakeholders of different levels were introduced. The main objective of this assistance scheme is to maintain the quality of the product to be competitive in international markets, product diversification and value addition and to facilitate marketing of EAC products. The details of the three assistance schemes are given below.

i. Group Processing Units

The Farmer Organizations registered with the department are eligible for this assistance scheme, under which machinery required for processing is issued free of charge. The farmer organizations should hold the responsibility of managing the processing unit and handling the

machineries. In addition, identifying the buildings required for installation of machinery should be performed by the Farmers' Organization itself. The department helps the Farmers Organizations by providing technical knowledge in operation and maintenance of these processing centres.

ii. Central Processing Units

This assistance scheme has been introduced for applicants who are capable of instigating a large scale processing measure investing more than one million Rupees. The investor is entitled for a cash grant of 25% of the total investment not exceeding 0.5 million Rupees, under this scheme. The investor has the whole authority to maintain the centre and utilization of the profits.

iii. Individual Processing Units

Growers or processors wish to set up a private processing unit for post harvest processing of EAC are eligible to apply for this assistance scheme. They are entitled to obtain cash grants for relevant machineries or post harvest processing facilities approved by the department as indicated in table 4.10.1.

Table 4.10.1 Assistance Scheme for Post Harvest Activities

	Type of investment	**Assistance grant per unit (Rs)**
01	Processing of black pepper	
	a) Blancher	1,000
	b) White pepper processing Machine	25,000
	c) Pepper Thresher	
	➢ Manually Operated	10,000
	➢ Electrically operated	20,000
	➢ Engine Operated	22,500
	d) Green pepper seed sorting Machine	8,000
	e) Grader	15,000
02	Processing of Coffee	
	➢ Coffee pulping Machine	
	➢ Manually Operated	5,000
	➢ Machine/Electrically operated	15,000
	➢ Coffee Huller	10,000
03	Processing of cocoa	
	➢ Three fermenting boxes larger than 2'x2'x2'	4,500 (1500 per box)
	(made from grade 1 timber)	6,000
	➢ Fermenting trays	
04	Volatile Oil Distillation Unit	
	➢ For new constructions	75,000
	➢ For repairs	75,000 (maximum)
05	Processing Centre – Minimum 400 feet	
	➢ Cinnamon	40,000
	➢ Other Crops	25,000
06	For Dryers	
	➢ Multi functional dryers (Capacity - 250 kg<)	100,000 10,000 (maximum)
	➢ Solar dryers (100 feet)	25,000
	➢ Protected threshing floor	Maximum Rs 25 /feet^2
	➢ Dryers set above the ground level	Minimum 200 feet^2
07	Vanilla – fermentation (Minimum Capacity - 20 kg)	10,000

Table 4.10.2 Performance of the Post Harvest Assistance Scheme in 2012

Item	Number of units granted
Distillation Units	24
Pepper Threshers	43
Dryers	25
Pepper Blanchers	91
Processing Centres/Units	45

4.11. Organic Farming Programme

Considering the growing demand for organically produced food in the international market, the department initiated the promotion of organic farming in the year of 1998. Major role of the Department in this regards were to educate growers on organic farming and principles behind that, establishment of demonstrations in selected villages, encourage them to keep records and, promotion of the use of organic manure and integrated pest management. Farmers were facilitated for marketing their products through introduction of the buyers/exporters.

Table 4.11.1 Extent established under Organic Farming Development Program in 2012.

District	Crop	Extent (Ha)
Kurunegala	Pepper	20.5
Matale	Pepper/Cinnamon	3.6
Kandy	Pepper/Nutmeg/Clove	121
Ratnapura	Cinnamon	1
Other Districts		17.6
Total		**163.7**

4.12. Farmer Training

Farmer training programs were organized and conducted by the Assistant Director in- charge of each district with their supporting technical staff in order to improve knowledge and skills of farmers and other stakeholders with updated technological information and to motivate farmers to adopt improved Good Agricultural Practices (GAP) in cultivation and processing of EACs. Required Resource personals and other services were obtained from the Research Division, wherever necessary, to conduct the training programs. Details of the training classes conducted in the year reviewed are given in table 4.12

Table 4.12.1 Progress in Farmer Training -2012

Activity	Number of programs	Number of beneficiaries
Farmer Training Classes & Field Days	2,983	77,551
Training of Cinnamon Peelers	108	1,282

4.13. Demonstrations

Field demonstrations were established and maintained at each Extension officer division to educate growers on Good Agricultural Practices (GAP) to increase crop yield and to reduce the Cost of Production. Field demonstrations are used for training programs and for dissemination of technology too. The details of demonstrations established are shown in table 4.13.1

Table 4.13.1 Demonstrations established and maintained in different Districts in 2012

District	Number of Demonstrations
Kurunegala	33
Matale	22
Kandy	22
Nuwara Eliya	2
Badulla	6
Moneragala	1
Hambantota	10
Matara	5
Galle	6
Colombo/Kalutara	0
Gampaha	46
Kegalle	15
Ratnapura	05
Total	173

4.14 Divi Neguma National Development Programme - 2012

Four development programmes were carried out in 2012 under the appropriation for “Divi Neguma” National Development Programme.

4.14.1 Issue of planting materials to home gardens (Divi neguma)

Planting materials of the following EAC crops had been distributed among beneficiaries at Divisional Secretariat levels through Divisional Secretaries of each corresponding Divisional Secretariat. Planting material issues under "Divineguma" home garden development programme is given in table 4.14.1.

4.14.1.1 Issue of planting materials to home gardens

District	Cinnamon		Pepper		Coffee		Cardamom	
	Target	Progress	Target	Progres	Target	Progress	Target	Progress
Kurunegala	200278	85774	75158	90126	22667	18845	-	680
Kandy	52050	23643	53750	24450	35000	5900	2750	137
NuwaraEliya	16000	8000	20000	11651	20000	300	-	-
Matale	15000	104080	25000	18870	7000	4400	-	-
Badulla	15105	5413	35740	14629	5924	17843	14085	8500
Monaragala	15950	19390	15950	16750	-	-	-	-
Hambanthota	46400	127000	22900	2700	5000	3800	-	-
Matara	82225	49700	84252	9480	-	-	3200	3200
Galle	100000	112375	50000	30515	-	-	-	-
Kalutara	50000	-	40000	13040	-	-	-	-
Colombo	330	580	35279	17175	10	-	164	-
Gampaha	100000	5874	50000	23140	-	-	-	-
Kegalle	50000	1650	50000	37390	-	-	6000	-
Ratnapura	100000	37325	30000	26265	-	-	18000	2950
Total	**843338**	**580804**	**588029**	**336181**	**95601**	**51088**	**44199**	**15467**

(I)

District	Clove		Nutmeg		Lemon Grass		Vanilla	
	Target	Progres	Target	Progress	Target	Progress	Target	Progress
Kurunegala	-	112	-	60	-	-	164	154
Kandy	850	100	1000	610	-	-	10500	-
Nuwara-Eliya	-	150	-	-	-	-	-	-
Matale	-	-	-	895	50000	-	-	-
Badulla	-	-	-	-	-	-	-	-
Monaragala	-	-	-	-	-	-	-	-
Hambanthota	-	-	-	-	-	-	-	-
Matara	-	-	-	-	-	-	-	-
Galle	-	-	-	-	-	-	-	-
Kalutara	-	-	-	-	-	-	-	-
Colombo	1457	-	594	-	425	-	50	-
Gampaha	-	-	-	-	-	-	-	-
Kegalle	-	-	-	-	-	-	-	-
Ratnapura	-	-	-	-	-	-	-	-
Total	**2307**	**362**	**1594**	**1565**	**50425**	**0**	**10714**	**154**

(II)

District	Arecanut		Ginger		Turmeric		Garcinia	
	Target	Progress	Target	Progress	Target	Progress	Target	Progress
Kurunegala	18401	35698	-	-	-	-	53	1088
Kandy	40000	1500	-	4860	-	1080	-	-
NuwaraEliya	10000	1830	-	-	-	-	-	-
Matale	14000	1565	-	-	-	1500	-	805
Badulla	-	-	-	-	-	-	-	3800
Monaragala	15950	3900	-	-	-	-	-	-
Hambanthota	-	-	-	-	-	-	-	-
Matara	1900	1900	-	-	-	-	-	-
Galle	5000	-	-	-	-	-	-	-
Kalutara	10000	-	-	-	-	-	-	-
Colombo	3217	6400	6022	-	3785	-	-	-
Gampaha	3000	25	-	-	-	-	-	-
Kegalle	-	220	-	-	-	-	1000	200
Ratnapura	5000	20452	-	-	-	-	-	-
Total	**126468**	**73490**	**6022**	**4860**	**3785**	**2580**	**1053**	**5893**

(III)

1.065Million of EAC planting materials, 4,860kg of Ginger seed materials and 2,580kg of Turmeric seed materials had been issued under this programme.

4.14.2 Installation of Plant Nursery Sheds

With the intention of facilitating the production and issue of premium quality plants to the farmers, registered private nursery owners were provided with technical information & guidance along with financial support for establishing plant sheds under "Divineguma" National Development Programme. Accordingly, the progress of plant nursery sheds that had been established in accordance with the recommended specifications of the DEA, is given in the following table.

Table 4.14.2.1 Target & Progress of Installing Plant Nursery Sheds

District	Target	Progress
Colombo	1	3
Kalutara	3	2
Gampaha	2	2
Galle	3	3
Matara	4	4
Hambantota	0	2
Nuwara-Eliya	5	2
Matale	2	2
Kandy	14	13
Kurunegala	1	1
Badulla	4	4
Monaragala	8	6
Rathnapura	3	3
Kegalle	0	0
Total	**50**	**47**

4.14.3 Commercial Cultivation Units

Export Agriculture Crops were established as model cultivations in selected lands from 0.2ha to 1.0ha with the aim of obtaining a sustained higher yield through methodical field establishment and maintenance of EACs. Actions have been made to offer a cash incentive to the farmers who pursued the prescribed cultivating practices under this programme. Following table shows the progress of establishment of commercial cultivation units.

Table 4.14.3.1 Progress of Establishing Commercial Cultivation Units

District	Target Units	Progress (Units)	Progress (Extent in Acres)	Progress by Crop (Acres)							
				Pepper	Cinnamon	Nutmeg	Clove	Cocoa	Citronella	Turmeric	Ginger
Colombo	03	5	10.5	0	10.5	0	0	0	0	0	0
Kaluthara	37	31	29.5	0	29.5	0	0	0	0	0	0
Gampaha	27	21	21.5	2	12.25	0	0	0	0	0.75	6.75
Galle	37	37	62.25	0	62.25	0	0	0	0	0	0
Matara	30	30	63.25	0	63.25	0	0	0	0	0	0
Hambanthota	31	36	69	5.5	56	0	0	0	7.5	0	0
Kegalle	37	35	40.75	32.25	7.5	1	0	0	0	0	0
Rathnapura	57	53	92.5	21	71.5	0	0	0	0	0	0
Kandy	50	54	64.5	49.25	6.5	8	0	0	0	0	0.75
Matale	56	50	79.51	46.26	21	2.75	0	9.5	0	0	0
Nuwara-Eliya	12	12	7.75	6.25	1.5	0	0	0	0	0	0.5
Monaragala	41	38	35.5	13.5	6.5	0	0	15.5	0	0	0
Badulla	22	19	27.5	16.75	10.75	0	0	0	0	0	0
Kurunegala	60	47	47.5	15.75	11	0	0	5	0	8.5	6.5
Total	**500**	**468**	**651.5**	**208.51**	**370**	**11.8**	**0**	**30**	**7.5**	**9.25**	**14.5**

4.14.4 Domestic Industry

Recognized entrepreneurs were encouraged to acquire higher advantages by processing EAC products to meet the premium quality and producing to the market as value added products. Technical guidance and encouragement to purchase necessary machines were provided through this programme. Accordingly, table 4.14.4.1 highlights the physical progress of the programmes implemented in 2012.

Table 4.14.4.1 Physical Progress of the Domestic Industry Programme.

District	Number	Project	Prescribed Machinery
Matale	11	Processing of qualitative pepper	Pepper Thresher
Rathnapura	02	Processing of qualitative pepper	Pepper Thresher
Hambanthota	01	Processing of qualitative pepper	Pepper Thresher
Total	**14**		

4.15 Smallholder Plantations Entrepreneurship Development Programme - 2012

Two Smallholder Plantations Entrepreneurship Development Programme (SPENDP) partially financed by IFAD were implemented in the districts of Kandy, Nuwaraeliya, Kegalle and Monaragala. Mid country programme was concentrated on tea small holders lands and Moneragala programme on rubber small growers. Under this programme 29,785 of pepper plants, 9870 of coffee seedlings and 9799 of Areca seedlings had been distributed among Kandy, Nuwara-Eliya and Kegalle districts in 2012. Training programmes for rising awareness among farmers and field days had also been held as a part of this development programme. Adopting cocoa as an intercrop on rubber in Monaragala district was also carried out during the year under this programme where 102,740 of plants were distributed to be planted on 93.4 ha of lands. Numerous projects including training of farmers, transporting of seedlings & issuing of cocoa seeds have been carried out under this programme.

In addition, 25 shade pruning kits (each kit valued Rs. 16,000) had been distributed among farmers. Each of these shade pruning kits contains a branch coppicing apparatus, a saw and a pruning knife and these kits are disbursed to farmers to make them self employed after in the village providing the regular training on shade pruning.

4.16 In-Service Training Centre Matale

Training Centre of the Department of Export Agriculture located at Matale conducts national level training programmes on every aspects of Export Agricultural Crop production for farmers, DEA officers, officer of other government and non-governmental institutes, university students, students of Agriculture training colleges, and other stakeholders.

Duration of the programme varies from 1 to5 days. It provides accommodation inclusive of meals free of charge for the Department officers and farmers. For other trainees, services are provided under nominal charges. The training centre provides residential facilities for 30 trainees at a time. During 2012, in addition to crop oriented trainings, a series of training programmes were designed and implemented in order to improve skills of staff such as office assistants and watchers in DEA to upgrade their knowledge.

Table 4.16.1 Summary of the Training Programmes Conducted in 2012

Type of trainees	No. of programs	Number of beneficiaries	Number of man days
Farmers	14	427	531
Student	7	184	270
Officers of Other Organizations	3	44	68
Assistant Directors and Head Quarter Extension officer	1	30	90
Extension officers	4	57	134
Extension officer, Research and Development Assistants, Farm service Assistants	6	175	459
Management assistance	1	13	26
Office assistants	2	31	70
Watchers	2	52	104
Graduates trainees	2	56	131
TOTAL	42	1069	1883
Conferences & Seminars	10	454	1044

Table 4.16.2 Individual /Small group consultancy & Out Reach Programmes

Subject	No of programmes	No of trainees
Ginger cultivation	01	01
Post Harvest Technology	01	01
Cinnamon cultivation & processing	01	01
Betel cultivation	01	01
Value added products	02	05
Kithul (Quality improvement)	03	90

Table 4.16.3 Subject Areas Covered (Farmer Trainings)

Subject area	No of classes	No of beneficiaries	Man days
Betel cultivation	01	29	29
Management of Export Agricultural Crops	03	92	170
Cinnamon cultivation & processing	02	16	33
Processing of Export Agricultural Crops	02	41	69
Pepper & Betel Cultivation	01	08	08
Pepper & Post Harvest Technology	01	37	37
Entrepreneurship Development (Entrepreneurs)	02	150	185
Nursery management (Nurserymen)	02	54	78

Table 4.16.4 Training Programmes Conducted for Department & Public service Officers

Subject	Target group	Number of programs	Number of trainees	Number of man days
Export Agricultural Crops management	Student (Agriculture schools & University)	7	184	270
	Trainee Graduates	1	25	100
	Officers of Hadabima Authority	1	24	48
Coffee Cultivation	Agalawaththa Plantations Company	1	`14	14
Turmeric cultivation	Officers of Ruhunu Foods pvt Ltd,	1	6	6
Computer Technology	EO	1	7	21
Office computer management & hardware	EO & FSA	2	49	98
Desktop presentation	EO	1	7	21
Computer technology for Government accounts handling	Management Assistants	1	13	26
Compost production	Trainee Graduates	1	31	31
Cocoa cultivation with rubber	EO & Trainee Graduates	1	17	34
Social mobilization	EO,R & DA,FSA	2	83	249
Marketing Extension	EO, R & DA	1	26	78
Service promotion programme	AD & HQ EO	1	30	90
Service promotion programme	EO	2	43	86
Service promotion programme	Administrative Assistants	2	31	70
Service promotion programme	Watchers	2	52	104

4.17. Communication Division

The prime objective of the division is to extend awareness among the stakeholders on EAC sector. Performance of the Communication Division in 2012 is summarized below.

Electronic Media -TV-

TV News

News items including important and timely messages, voice cuts and videos recorded at the department studio were delivered to various television channels including Rupavahini, I.T.N. and Swarnavahini. During the year, 18 TV clips were delivered.

TV Commercials:

Television commercial programme developed at the department studio to promote pepper Shade Pruning Week was telecasted through *Rupavahini,* the national television channel of Sri Lanka.

Video Documentary

A video documentary including detailed technical information on pepper cultivation titled *"Gammiris Wagawata Athwelak"* (A guide for Pepper Cultivation) was made in visual form enabling the cultivators to absorb the content quickly and clearly. The DVD was distributed among all the district officers and currently being used as a training aid for growers and other interested parties.

Video Documentary on Sri Lankan Spice Saga

A video documentary titled "Sri Lankan Spice Saga" aimed to promote Sri Lankan spice industry was created at the Communication Division for the 40th Annual Sessions of the International Pepper Community held in Sri Lanka. The entire production including script writing, visual capturing, editing, and narration were accomplished by the communication division.

Video Documentary on International Pepper Community

A video documentary containing the events of the 40th Annual Sessions of the International Pepper Community titled "Memorable moments of IPC 2012" was produced by the Communication Division and circulated among the IPC member countries and participants.

Electronic Media - Radio

'Deye Urumaya' Radio programme produced by the division was broadcasted through "Swadeshi", "Rajarata" & "Ruhunu" Service radio channels on every Monday at 7.00 p.m. No of programmes broadcasted are 52.

Print Media

Brochures

1. A Brochure was designed and printed by the Communication Division to promote the Pepper Shade Pruning Week. No of Brochures printed -10,000.
2. A Brochure titled "Spices in Wonderland" was written, designed and printed in English to promote the spice industry. No of copies printed - 1000

Brochures for "Deyata Kirula" Exhibition-

Following Brochures were designed and printed for distribution among the needy visitors at the department stall of Deyata Kirula exhibition held in Oyamaduwa, Anuradapura.

- Turmeric Cultivation
- Ginger Cultivation
- All spice crops
- Departmental Services
- No 6,000 copies were printed

Technical Bulletins

Technical Bulletins for Turmeric and Ginger cultivation were printed this year to fulfil the need of interested parties in gaining technical expertise on these very popular short term spice crops. No of copies printed -20000

Booklets

1. A Booklet was printed on "Good Agricultural Practices for Pepper". This is a Sinhala translation of the latest recommendations published by the International Pepper Community. No of copies printed-5,000
2. A booklet was printed on EAC Nursery Management techniques prepared by the Development Division. No of copies printed-5,000.
3. I.P.C. Directory booklet was printed for the 40th Annual session of the International Pepper Community conference held in Sri Lanka. No of copies printed-500.

Newspaper Advertisements

Farm gate prices supplied by the Economics Research Division are published weekly in "Dinamina" newspaper every Friday. This provides the opportunity for the cultivators to get awareness about the market prices of the Export Agriculture Crops products prevailing in various districts and enables them to sell their products at more competitive market.

No of articles published-52

Other Newspaper Articles

Newspaper articles were published on newspaper supplements ',Koratuwa' (Rivira) and 'Kamatha' (Divaina). No of Articles Published-3

Development news on various events taken place during the year 2012 was published on National News papers. No of Articles Published- 5

Newspaper advertisements were published on International Pepper Community conference.

No of Articles Published-3

"Sarathi" News Bulletin:

'Sarathi' News bulletin containing articles written by officers of the Department of Export Agriculture is designed and printed by the Communication Division. No of copies printed-5,000

Other Printing Work:

- Printing and cover page designing of the Performance and Accounts Report 2012 was accomplished by the Communication Division.
- Dockets were designed and printed by the Communication Division for I.P.C.2012 conference. No of dockets done-400
- A Certificate was designed and copies were printed by the Communication Division for the In-service Training centre Matale. No of copies printed -2000

- Large format Digital posters were designed and printed for International pepper Community Conference. No of Prints done – 4
- Invitation Cards were designed and printed for the opening ceremonies of the cinnamon Training Centre, Assistant Director's Office at Kalutara and International Pepper Community annual meeting.

Flex Prints

Large format flex prints were designed and printed for the Annual Symposium on Minor Export Crops (ASMEC) held at Gannoruwa, Peradeniya. No of prints done- 29

Official Website Development - www.exportagridept.gov.lk

Official website development is mainly undertaken by the Communication Division. New features have been added and the website is promptly updated with the content obtained by relevant officers.
As a remedial measure to gain more access to upload information the additional web address *www.exagri.info* was introduced. Following tasks have been accomplished during the year 2012.

1) Market information weekly update. This has been made accessible from mobile phones too (exagri.info/mobile)
2) Video clips ('Sengavunu Kahawanu 'TV programmes, I.P.C.2012 Video films, "Pepper Industry in Sri Lanka" and other video documentaries)
3) Books on PDF format (Performance & Accounts Reports.)
4) Digital Books on PDF format (Technical bulletins.)

Exhibitions

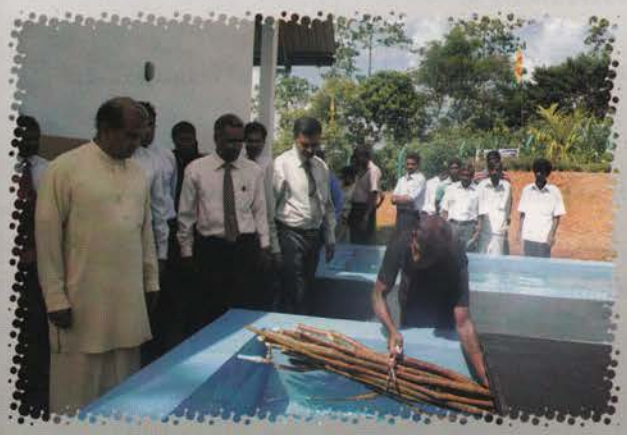
Design and installation of exhibition stalls are undertaken by the Communication Division.
Communication Division have rendered their contribution for the following national level exhibitions.

1) "Deyata Kirula" 2012 exhibition held at Oyamaduwa, Anuradapura.
2) Agriculture Department Centenary Celebration and "Farmers Week" exhibition, Gannoruwa.
3) "Divineguma" exhibition held at Matale.

In addition to that, the division has contributed through providing exhibits, digital boards etc. for other exhibitions taking place in other districts. The division responded to telephone inquiries and visitors who sought information on EAC sector at our information desk.

No of callers -2400

No of visitors -168



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ஆராய்ச்சி
RESEARCH

5. RESEARCH DIVISION

5.1 Technical functions and organization of Research Division

The Research Division operates under the supervision of the Additional Director General (Research) and consists of three main units; Commodity Research Unit, Economic Research Unit and Plant Protection Unit. Central Research Station and six sub-stations had constantly been developing appropriate technologies to solve farmers' problems and new technology to enhance the production, productivity and quality of Export Agriculture Crops. The locations of the Research stations and their functions are given bellow.

- Central Research Station, Matale - Multidisciplinary Research on EACs except Cinnamon, Citronella and Betel
- Cinnamon Research Station , Pallolpitiya, Matara - Multidisciplinary Research on Cinnamon and Citronella
- Intercropping & Betel Research Station , Narammala - Intercropping of EACs with Coconut and Betel
- Tissue Culture Laboratory and Plant Production Nursery , Walpita - Tissue Culture Research and Plant Propagation
- Sub-Research Station , Kundasale - Multidisciplinary Research mainly on Cocoa, Kithul, Ginger and Turmeric
- Sub-Research Station , Nillambe - Cropping Systems
- Sub-Research Station , Delpitiya - Organic Farming and Spice Park
- Economic Research Unit , Head Office, Peradeniya - Conducting of Economics and Marketing Research

Central Research Station and Plant Protection Unit function under the Director (Research) of Matale. Cinnamon Research Station and Betel Research Station are also operated under two Directors (Research), while other sub-research stations function under the supervision of the respective Research Officers in-charge. The progress of the research projects conducted in 2012 at the main research station and other sub-stations are described below, on crop and discipline basis.

5.2 Achievements of the Research programme on EAC's 2012

5.2.1 Cinnamon

Agronomy

In order to identify the chemical properties of wild Cinnamon species, bark and leaf samples of them were analysed for oil contents and chemical attributes. Results have shown that there were differences in oil percentages as well as composition of bark and leaf oil, in respect to true cinnamon. *C. Sinharajense* was found to be much closer to true Cinnamon in respect to content of Cinnamaldehyde

in bark oil and Eugenol in leaf oil. Bark and leaf oil of *C. citriodorum* contains Citronellal as the major component.

5.2.1.1 Composition of Cinnamon oil according to the species

Cinnamon Species	Bark oil %	Major compound in bark oil	Leaf oil %	Major compound in leaf oil
C. dubium	1.7	Linalool 33.6 %	0.8	Beta Pinene 42.0 %
C.capparu-coronde	1.6	1:8 Cineole 27.6 %	1.5	Citral A 19.3%
C.rivulorum	0.5	Myrcene 44.5%	0.4	1:8 Cineole 27.3%
C. Sinharajense	3.5	Cinnamaldehyde 55.0 %	2.4	Eugenol 96.0 %
C. citriodorum	0.8	Citronellal 32.1%	0.9	Citronellol 66.8 %
C. litseaefolium	1.0	Eugenol 55.9%	0.6	Borneol 20.3 %
C. zeylanicum	2.9	Cinnamaldehyde 75.0%	4.0	Eugenol 85.0 %

Cinnamon seeds packed in sealed transparent polythene bags of up to 1kg could be stored for about 4 months with a germination percentage above 95%. Seeds packed in 3kg and 5kg sealed transparent polythene bags could be stored up to 2 months and 1 month period, respectively, with a germination percentage above 80%.

Studies revealed that sprouted seeding is more suitable than direct seeding to establish seedlings in the nursery. And also, sprouted seeds covered with cajans exhibited shortest germination time as 5–7 days after seed planting.

Seven cinnamon accessions out of ten selected accessions of the Cinnamon Research Station were grown under coconut at IBRS, Narammala. According to the growth and yield performances, CRS 40 (Sri Gemunu) and CRS 317 (Sri Vijaya) were found to be the most promising accessions, yielding over 500 kg of dry bark /ha/yr (per coconut ha).

Crop Protection

Rough bark disease of Cinnamon could be controlled by Bordeaux mixture, Tebuconasol and Copper hydroxide applied at 4 weeks intervals.

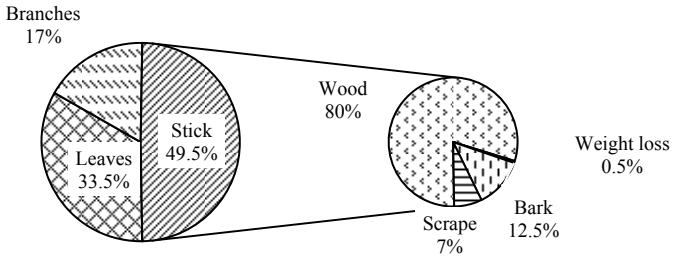
Studies revealed that there is no direct relationship between any pest attack or fungal infections on canker development in mature cinnamon stems. Maintaining of regular short harvesting intervals (6 to 4 months) are suitable cultural practices to avoid stem canker incidence in cinnamon.

Post Harvest Technology

A study was conducted to develop the ratio between fresh cut stem of Cinnamon to the final dry bark yield. Results show that the ratio of fresh bark is 12.5% to the fresh stem weight. The dry bark weight was found to be 5% to the fresh stem weight. This value may vary from 4.5-5.5% depending on the stem size and the bark thickness.

Furthermore, it was revealed that from fresh Cinnamon tree cut from the field has 49.5% stem, 33.5% leaves and 17% branches. From the 49.5 % of stems, 80.0% wood, 12.5% fresh bark, 7.0% scrapes and 0.5% weight loss was reported. The values are graphically presented in the following diagram and the information can be used to establish bought cinnamon stem processing units.

5.2.1.2. Percentage weights of stem parts



5.2.2 Black Pepper

Agronomy

Studies on support tree (Gliricidia) pruning confirmed that regular pruning is essential to receive adequate sunlight for pepper plant. Number of spikes in upper canopy layer was significantly higher than the middle layers. All the yield attributes were significantly low in 4^{th} layer compared to upper layers. Yield parameters of, number of new spike initiations, number of matured spikes and number of berries per spike, fresh berry weight and dry berry weight showed significant and positive relationships with the Photo synthetically Active Radiation (PAR) absorption percentage of pepper canopy. The highest relationship of PAR absorbed ($R^2 = 0.72$) was observed with the yield attribute of dry berry weight and the lowest ($R^2 = 0.51$) was with number of new spike initiation. The study confirmed the recommendation made in 1994 on support pruning of Black Pepper, 3-4 times a year.

According to the available data of Kundasale sub-station, no significant positive effect of light berry harvesting on subsequent yield of black Pepper could be observed. Immature harvesting reduced the harvested dry pepper weight significantly, resulting in low income for farmers.

Soil and Plant Nutrition

Application of 10kg of Gliricidia per plant per year with 700g of inorganic fertilizer in two splits recorded best yield performance over ten years. Pepper yield of 2,666kg/ha/year was recorded at Matale following the above treatment in 2012 and at Wasanagama it was 1,803kg/ha /year.

Yield data recorded in past ten years in a study of potential use of locally available P sources in pepper showed a positive response for added phosphorus. Based on the cumulative yield of past years, application of Eppawala Rock Phosphate (ERP) instead of imported Rock Phosphate (IRP) at the rate of 120g P_2O_5/plant/year was sufficient to achieve economical yield of black pepper.

Studies related to pepper organic farming revealed application of either 6kg of Vermi-compost or 10kg of compost per plant/year was adequate as an alternative for chemical fertilizer.

Comparison of locally isolated Mycorrizae, *Glomus* sp. DEAAMS1 (AM1) with reference strain of *G. mosseae* (AM2) at different phosphorous (P) levels for black pepper revealed that native AM isolate has a potential as an alternative to reference *G. mosseae as* P solubiliser.

Genetics and Plant Breeding

A multi-location evaluation of promising black pepper lines were initiated in Matale, Nillambe, Nikapotha and Middeniya with the objective to evaluate the performance of each of those lines under different agro-ecological conditions and to use them as a mother stock for future breeding programs. They showed differential behaviours in growth and yield under different climatic conditions. Panniyur-1 and UD-21 performed well in all locations. Fast growing black pepper varieties can show better field establishment as well as horizontal adaptability to different climatic conditions.

Two wild *Piper* specimens were collected from Kelebokka (in Matale district) and Soragune (in Badulla district) and they were identified as *Piper hymenophyllum* and *Piper walkeir* respectively. Another *Piper* specimen was collected from Madulkelle area, which contains 2.56% of oil, 11.00% of oleoresin and 1.85% of *piperine*.

Post Harvest Technology

Evaluation of Cabinet type kerosene dryer (Model: NEFCD 02) showed that 225kg of blanched matured green pepper (moisture content 79% w/b) was reduced to 10% within 9 hours consuming 29 litres of kerosene and 12kwh of electricity. Temperature varied from 50^{o}C to 70^{o}C during the test. The dryer can be recommended for EACs after few modifications such as relocation of sensor of the thermostat from the top of hot air generator to the middle of hot air generator unit and accommodating another 10 trays in the drying chamber. When adjusting the temperature to 55^{o}C by temperature controller, temperature varies from 50 to 60^{o}C in the drying chamber. Expected capacity and drying time under suggested condition will be 275- 300 kg per batch and 12 hrs for pepper.

5.2.3 Cocoa

Agronomy

Seedlings, bud grafted plants and rooted cuttings were tested for field establishment using different cocoa cultivars (W5/5, WK-2 and Na32 x ICS1). All tested planting material showed more than 83 percentage of success at the initial field establishment except for the rooted cuttings of hybrid Na32 x ICS1.

Mass propagation of selected Trinitario type tree No.01(IBRSC1), No. 06(IBRSC3) and upper Amazon type tree No.24(IBRSC2), based on four year yield performance, are in progress as rooted cuttings and bud grafted materials. These mother trees were originated from open pollinated seedlings of respective cocoa cultivars. These mother plants have naturally adopted for over 15 years under intercropping condition with coconut in low country intermediate zone with high yields.

Soil and Plant Nutrition

Bio-composting of different additive mixtures was allowed to continue for four months. The chemical properties of cocoa pod husk compost at the end of the experiment ranged from pH 8.33-9.14, Organic carbon 9.02 -10.37%, total nitrogen 0.9 -1.0%, C:N ratio 9-10, P 0.27-0.87%, K 0.5-1.50% and Ca 1.11-2.39%. The best additive mixture was cocoa husk (1) + Microbial inoculants + 10% cow dung slurry + 5% Rock phosphate + Gliricidia (1) + Ginigrass (1/2) + Micro nutrients. In 2012 it was further improved to get the pH value around 7.5-8.0 range by increasing the composting time up to 120 days.

Genetics and Plant Breeding

Under the characterization of the available cocoa germplasm, 85 lines have been characterized to conserve available germplasm as a field gene bank. So far, leaf and pod characteristics were recorded and a block was field established with bud grafted lines. The tested lines differed with the pod and bean characteristics.

Entomology

Screening of capsid bug (*Helopeltis ceylonensis*.) resistant/tolerant cultivars of cocoa revealed that out of selected ten local cultivars of cocoa (W5/5, W5/24, W5/566, W6/6, W6/24, W6/26, W6/457, SCA6XICS6, ICS1XNA32 and SCA12XNA34), ICS1 X NA32 was the most susceptible to capsid bug attack.

5.2.4 Coffee

Agronomy

Mycorizal inoculum at the rate of 100 g for one standard size (8” x 5”) polythene bag before planting coffee seedlings was suitable to obtain good quality planting materials for field planting at the 5th month of growth in the nursery.

Genetics and Plant Breeding

Evaluation of seven coffee introductions with locally selected coffee varieties revealed that Indian introduction C x R and IMY are the best varieties, providing highest yield with more than 2,000 kg/ha/yr of parchment coffee yield, while BS III, Catimor and BS II have given over 1,700 kg/ha/yr**.** Diallele crossings were carried out among the promising lines at the Central Research Station, Matale and F1 plants were field evaluated with selected IMY plants. From the yield data, seven lines were selected for further improvement through back crossing. Vegetative propagated plants obtained from two best lines, I 44/1 and I 26/1 were field planted.

5.2.5 Cardamom

Genetics and Plant Breeding

Seedlings obtained from the best performing and well adapted cardamom from the third generation of the low elevation cardamom block at Elston estate, Avissawella were field established at the Gomaragala Estate, to select highly adopted lines for the lower elevations under Mahogony.

Entomology

To develop a control measure for cardamom thrips, *Sciothrips cardamom,* four insecticides were tested. Two organic insecticides (Kalani *Shãka Sãra*- Product contained cinnamon powder, neem seed powder etc. 20ml in 10 l of water and Product from EOAS International Ltd. – Organic product 10 % solution) were tested with two other recommended synthetic insecticides Quanilphos (recommended in India) and Provado (recommended in Sri Lanka), at Madolkelle. Provado and Quanilphos recorded the minimum number of thrips while two organic pesticides showed significantly lower number of thrips per pseudostem compared to the untreated bushes.

5.2.5.1 : Percentage of thrips damage according to the treatment

Treatment	No. of thrips per pseudo stem	% damage by thrips
Control	3.84^{a}	14.15^{a}
Provado – Imidaclorprid 75% WG-	0.43^{c}	2.53^{c}
Quanilphos-	0.36^{c}	3.79^{c}
Kalani Shaka Sara	2.51^{b}	8.88^{b}
EOAS International Ltd	2.80^{b}	11.24^{ab}

5.2.6 Clove

Plant Pathology

Causal agent of leaf fall disease of clove was identified as *Cylindrocladium sp.* Six different fungicides namely, Carbendazim 50 % WP (w/w; 350 ppm), Mancozeb 80 % WP (w/w; 1600 ppm), Copper oxychloride 50 % WP (w/w; 2000 ppm), thiophanate methyl 70% (420 ppm), tebuconazole EW 250 (125 ppm) and bitertanol EC 300 (333 ppm) were used for the *in vitro* fungicidal assay. The activity of thiophanate methyl and carbendazim was checked *in vivo* using infected nursery plants.

Carbendazim and thiophanate methyl showed effective control of growth of the fungus under *in vitro* and *in vivo* conditions. These two chemicals are recommended to manage the disease; however, spraying carbendazim is more economical.

Post Harvest Technology

Production of special grade clove with its golden brown colour is difficult with conventional sun drying technique. Randomly selected fresh clove buds were subjected to blanching in hot water at different temperatures (70^0C to 100^0C) and different time periods (10 seconds to 135 seconds) and dried under sun. Results showed special grade clove can be produced by blanching fresh clove at 80^0C for 30 - 60 seconds in hot water without any significant oil loss.

5.2.7 Ginger

Soil and Plant Nutrition

Confirming the fertilizer recommendation for ginger, fresh ginger yield of 15 Mt /ha was obtained from "Rangoon" type ginger through application of 30 tons of compost and 100 kg of TSP per hectare as basal dressing. In addition, 82 kg of Urea and 42 kg of MOP per hectare should be applied at 45^{th} day and 60^{th} day after planting as a top dressing. If green manure is adequately available, an alternative recommendation of 20tonnes of compost and 10tonnes of fresh Gliricidia leaves per hectare as basal dressing and two more Gliricidia applications of 10 tonnes twice at two months intervals can produce a yield of 16 Mt/ha, without chemical fertilizer.

Plant Pathology

Water extracts prepared using both compost and fully decomposed cow dung were evaluated for controlling soil-borne diseases of ginger. Both the extracts were odourless, brownish, clear, slightly acidic (pH 6.0-6.5) solutions containing complex and diverse microbial populations dominated with Gram negative *Cocci* & *Bacilli* and few fungal species with resemblance to *Aspergillus* spp**.** *In vitro* studies were conducted on PDA and Nutrient Agar plates with P*ythium* spp and *Pseudomonas* spp isolated from soil showed that there was no direct suppression of the micro organisms by applied extracts but suppressed the growth.

Post Harvest Technology

A ginger peeling machine was developed and evaluated for bleached ginger production. The machine consists of a washing tank, a rotating plastic brush driven by an electric motor, close lid and angle iron frame. The best performance for local ginger (stored for 1 month after the harvest) was shown when the machine was operated at 103 rpm for 15 minutes. Ninety three (93) percent of ginger was satisfactorily peeled to produce bleached ginger. Capacity is 15 kg/hr, weight recovery percentage is 85% and over peeling percentage is 14%. Best performance for Chinese ginger (stored 1 month after harvesting) was shown at 103 rpm for 10 minutes. Fabricated Ginger peeling maching can be recommended to be used for peeling ginger to produce bleached ginger. Moreover, the machine can

be used as a washer when it is operated at low speed (77 rpm) for 1 minute. In addition, when fresh ginger was used for peeling immediately after harvesting, 100 % peeling could be achieved. Therefore, it can be used to peel fresh ginger within 7 days for other value addition purposes such as sweetened or preserved ginger and ginger pickle.

5.2.8 Turmeric

Post Harvest Technology

Turmeric samples collected from 48 different locations in Sri Lanka were analyzed to determine Curcumin content. Curcumin content of turmeric samples varied from 4.01 % to 7.72 % and the highest value was observed with samples collected from Dehiattakandiya.

Effect of different sodium carbonate concentrations and different boiling times on colour development of dried turmeric was tested. Both sodium carbonate and boiling time affected on curcumin concentration of turmeric rhizomes. Effect of one factor on curcumin varies with the changes in another factor. Best curcumin concentration levels for both bulbs and fingers were observed within the range of 0.40 to 0.60 % sodium carbonate concentrations and boiling for 30-45 minutes. Treating turmeric with sodium carbonate reduces boiling time, increases curcumin percentage and improves colour.

Entomology

Pest damage on stored turmeric and ginger was observed in second month and third month of stored period respectively and there were significant population of *Lasioderma serricorne* Fab. and *Stegobium paniceum* L. in dried Ginger and Turmeric compared to other stored pests.

5.2.9Betel

Soil and Plant Nutrition

A fertilizer study over a three year period reconfirmed that the application of existing straight fertilizer recommendation showing the higher yield and higher export quality leaf percentage as well as leaf size. From this study it was ascertained that the practice of application of well decomposed cattle manure layer of 2 inch at three months interval should be continued for sustainable yield.

5.2.10 Arecanut

Genetics and Plant Breeding

Evaluation of 296 arecanut germplasm at Central Research Station, Matale revealed that Arecanut line F34 performs better and it yielded 1,192 nuts/tree for the year 2012. Other promising lines were G24 and J22 which were yielded over 800 nuts/tree/yr. According to the cumulative yield of past nine years J22, F34 and G24 are the best performing areca nut lines currently avilable.

Plant Pathology

Application of Mancozeb at the rate of 24% a.i (3.0g/L) was recommended to control leaf blight disease of arecanut caused by *Curvularia* spp. Leaf samples which showed typical symptoms of yellow leaf disease collected from Badulla and Mawathagama were sent to the Coconut Research Institute of Sri Lanka (CRI) for detection of Phytoplasma infection. CRI confirmed that samples of infected leaves of arecanut collected from Badulla and Mawathagama areas were free from Phytoplasma, the causal organism of Weligama coconut wilt.

5.2.11 Garcinia (Goraka)

Physiology and Plant Production

Wedge grafting was performed from selected high yielding goraka mother trees in Ovilikanda, Gasnawa and Aranayake in 2004. These grafted plants were used for field evaluation in Matale Research Station (four selections) and Gasnawa Central nursery (five selections) in 2005. Increasing trends were observed in overall plant height and lateral spread. Average height and lateral spread of grafted plants in 2012 were 160.0cm and 155.0cm in Matale and 262.5cm and 289.0cm in Gasnawa. Flowering and fruit set was started after 4 years. The average number of fruits per tree was 30.0 at the end of seventh year.

5.2.12 Vanilla

Physiology and Plant Production

Growth of two, three and four nodal cuttings, 1 meter long cuttings and tissue cultured plants were compared in the field. Shoot growth and girth of the vine of tissue culture plantlets initially showed less growth than other plants. After 3 years, vines from all five types showed similar growth and no significant differences were detected among them. After three and half year of planting, flowering occurred in all five types of vines, but the percentage of flowering varied with the type of cutting. Lowest flowering percentages were observed in tissue cultured plants and plants from two nodal cutting, while percentage of flowering was significantly higher in 3 nodal, 4 nodal and 1 meter long cuttings. Therefore, three and four nodal cuttings or 1meter long cuttings should be used as planting materials for commercial vanilla cultivation to achieve higher yields.

5.3. Ongoing Research during the year 2012

5.3.1 Cinnamon

- Development of integrated pests and disease management (IPM) package for cinnamon nurseries
- Investigation of soil invertebrates activities in cinnamon fields
- Study the effect of urea application on peelability of cinnamon
- Effect of leaf drying period and distil duration on citronella oil production

- Designing and evaluation of new peeling table for cinnamon
- Evaluation and comparison of super quality characters of "peris" cinnamon with selected cinnamon varieties. (Sri Gemunu and Sri Wijaya)
- Screening and evaluation of selected hybrid cinnamon plants for quality, growth, and yield performances.
- Effect of different pruning cycles on growth and yield of cinnamon
- Studies on different application of chemicals and covering the cut surface after harvesting on initiation of more healthy shoots
- Damage assessment and evaluation of the efficacy of vertebrate pest management methods on cinnamon
- Identification of cinnamon thrips species, their biology and control methods
- Evaluate the effectiveness of different fungicides and application time period on control of white root disease
- Isolation and identification of attractive chemical compound for cinnamon wood boring moth
- Effect of fertilizer application time on growth, yield and peelability of cinnamon
- Improvement of subsoil as a potting mixture by adding vermi-compost and microbial compost for cinnamon seedling
- Evaluation of elite cinnamon lines for intercropping under coconut.
- Evaluation of selected cinnamon VP lines in the mid country region.

5.3.2 Black Pepper

- Comparison of growth and yield of pepper plants (*Piper nigrum* L.) raised from orthotropic, plagiotropic (lateral branches) and single nodal cuttings.
- Comparison of growth and yield of pepper (*Piper nigrum* L.) raised from tissue cultured plants and single nodal cuttings.
- *In vitro* clonal propagation of local selections of pepper (*Piper nigrum* L.) with higher yield and quality.
- Investigation of effect of source of nitrogen on growth and yield of black pepper.
- Effect of cover crops on soil properties, growth and yield of black pepper.
- Study of pepper Vine Borer (*Pterolophia annulata*), biology, damage and control.
- Studies on variation of flowering, fruit setting and yield of black pepper (*Piper nigrum)* under different agro-ecological zones.
- Study the potential use of Coconut tree as a live support for pepper.
- Effect of different pruning levels on canopy development and yield of pepper.
- Comparison of black pepper *(Piper nigrum* L) yield per unit area of plants originated from orthotropic and plageotropic branches.
- Evaluation of local pepper varieties under organic conditions.
- Study the effect of light berry harvesting of black pepper under organic conditions.
- Evaluation of selected accessions of black pepper
- Post Harvest Pathology; detecting contaminations & control of pepper.

- Studies on variation of vegetative growth, flowering, fruit setting and yield of black pepper under different agro- ecological zones.
- Determination of oil, oleoresin and piperin content in pepper from different locations in Sri Lanka.
- Field evaluation of the potential use of green manure as a source of fertilizer for black pepper under different agro climatic conditions.
- Investigation of possibility of substitution of ERP for IRP for pepper.
- Investigation of effect of Mg on growth and yield of pepper.
- Effect of different types of pepper cuttings on initial growth and subsequent canopy development
- Site specific fertilizer recommendation for pepper.
- Impact of organic farming in comparison to conventional farming practices on yield and soil properties of pepper
- Mass propagation and field evaluation of native VAM inoculant for black Pepper
- Effect of micro-irrigation on plant establishment, growth and yield of black pepper
- Improvement of resource use efficiency of black pepper to increase the yield through support tree manipulation
- Evaluation of pepper germplasm from the local gene pool
- Evaluation of pepper introductions
- Characterization of wild relatives of black pepper and establishment of a field gene bank
- Field evaluation of bush pepper (Local and Pannyur-1)
- Evaluation of vegetative propagation methods of pepper for mass production (bamboo method, heap method, and serpentine method)

5.3.3 Cocoa

- Productivity improvement of cocoa through integrated soil and plant nutrients management under rubber and coconut
- Screening of capsid bug (*Helopeltis ceylonensis* resistant /tolerant cultivars of cocoa)
- Selection of cocoa (*Theobroma cacao*) mother plants for mixed cropping.
- Productivity improvement of cocoa (*Theobroma cacao* L.) through integrated soil and plant nutrient management system including good management practices under coconut and rubber- (NARP Project) (coconut component)
- Studies on rehabilitation of old cocoa.
- Evaluation of field performance of rooted cocoa (*Theobroma cacoa L.)*
- Evaluation of cocoa for mid country intermediate zone.
- Characterization of available cocoa (*Theobroma cacao* L.) lines and Establishment of a clone garden.

5.3.4 Coffee

- Use of *Beauveria brassiana* for the control of coffee berry borer.
- Investigations of biological control agents of coffee berry borer.
- Strategies for organic cultivation of Arabica coffee.

- Evaluation of coffee introductions and local selections for mid country intermediate zone.
- Evaluation of coffee introductions and local selections for intercropping with tea in up country wet zone.
- Evaluation of hybrids and selected lines of coffee.

5.3.5 Cardamom

- Productivity improvement of cardamom using better cultural practices (supplementary irrigation and pit size**).**
- Biological control of cardamom thrips.
- Selection of high performing plants from subsequent seedling populations of cardamom under rubber at low elevation.

5.3.6 Betel

- The effect of different combinations of green manure, cow dung and recommended department fertilizer mixture, on quality and yield of betel (*Piper betle*)
- Evaluation of suitable fertilizer levels of Department Fertilizer mixture for single supporting system in Betel (*Pipper betle*. *L*)
- Evaluation of different fertilizer mixtures for betel (*Piper betle*) produced for local market

5.3.7 Arecanut

- A study on Leaf blight & Yellow leaf diseases of Arecanut *(Areca catecu* L*)*. and its control
- Evaluation of arecanut germplasm for intermediate zone
- Evaluation of arecanut germplasm for dry zone
- Selfing and evaluation of arecanut
- Hybridization and evaluation of arecanut
- *In vitro* Propagation of Arecanut

5.3.8 Ginger

- Evaluation of ginger (*Zingibar officinale*) germplasm under coconut
- Effect of the size of planting material on yield and quality of ginger *(Zingiber officinale)*
- Effect of planting time of the year on the yield of ginger (*Zingiber officinale*)
- Effect of different type of mulches on growth and yield of ginger.
- Use of water extracts of compost and cattle manure to control soil borne plant pathogens of ginger
- Economic Analysis of forward marketing arrangements for ginger in Kandy district

5.3.9 Turmeric

- Effect of the size of planting material on the yield and quality of turmeric (*Curcuma longa*)
- Fertilizer studies on turmeric.
- Determination of curcumin content in turmeric from different locations in Sri Lanka.

5.3.10 Other

- Field evaluation of grafted nutmeg (*Myristica fragrans*) selections.
- Field evaluation of grafted goraka (*Garcinia quaesita*) selections.
- Evaluation of storage pest damages of Export Agricultural Crops.

- Management of leaf fall (Dying back of branches) disease of mature clove trees in clove growing areas.
- Preparation of bio fertilizer (Arbuscular Mycorriza-AM), Bio control agents (*Trichoderma* spp. *Pseudomonas fluorescence)* and mass culturing.
- Production of organic fertilizers from cocoa and coffee crop waste.
- Developments of tray drying technology to improve quality of Export Agricultural Crops.
- Development of an integrated nutrient management system for export agricultural crops by increasing the nutrient uptake efficiency using mycorrhizal associations.
- Feasibility study to find a suitable vegetative propagation technique for clove.
- Technology innovation for large scale in-vitro multiplication of cardamom, pepper, ginger, turmeric and cinnamon.
- Estimation of average annual productivity levels of EAC crops at the field level (suggested by the committee of enhancing the use of agricultural data).
- Analysis of Competitiveness of Small and Medium scale Value Added Product Enterprises in the EAC sector.

5.4 Progress of Other Activities of the Research Division

5.4.1 Planting material issued by the Research Division

Cinnamon	-	138,305
Pepper	-	59,145
Bush pepper	-	515
Coffee (plants)	-	3858
Coffee (seeds)	-	5 kg
Cardamom	-	15,511
Vanilla	-	21
Cocoa	-	2632
Nutmeg	-	584
Kitul	-	5980
Arecanut (seeds)	-	128825
Arecanut (plants)	-	56340
Clove	-	101
Garcinia	-	203
Betel	-	454
Innamon seeds	-	300kg

5.4.2 Maintenance of Germplasm / Seed garden

- Planting materials were raised from four selected Robusta coffee lines (I 44/1, I26/1, BS1 and CxR), four Arabica coffee selections (S 4/2, S 4/5, HK and S 4711) which produce highest yields.
- Established coffee clone/seed gardens at Polgahawela, Wennoruwa, Gasnewa, Ginigathhena and Walapane departmental nurseries and Matale, Walpita & Nillambe research stations for

issuing plant/seed materials. Two thousand plants were issued from selected Arabica lines to Kahagala estate, Haputale to develop as a seed garden.

- Two promising accessions with Ec 201 (720 kg/ha) and Ec 301 (450 kg/ha) are being multiplied for issuing nucleus materials at Research Station, Matale for high elevations.
- Arecanut seed gardens were field established and maintained from Line J 22 (>750 nuts/yr) at Matale, Gasnewa, Nillambe and Middeniya.

5.4.3 Plant Certification Programme.

Number of visit for plant certification in Matale district – 2

5.4.4 Estate visits for advisory services on soil fertility management:

- 4th December 2012- Visited Anamale estate in Matale district to investigate the soil problems and low productivity in Export Agriculture Crops
- 14th September 2012- Visited Pallepola jims farm estate in Matale district to investigate the soil problems and pepper yellowing fields

5.4.5 Training Programmes

Pepper cultivation-13

Cocoa cultivation–02

Cinnamon cultivation–01

Nursery management-02

Post harvest technology-13

Soil and plant nutrition–06

5.4.6 Production of Organic Fertilizer

25 cubes were produced and used for plant production experiments, demonstration trials and home garden.

5.4.7 Field visit (Plant Protection Unit)

The officers attached to plant protection unit had visited following areas to investigate pest and disease problems mentioned below.

- Wahakotte, Rathtota, Elkaduwa, Kegalle, Badulla - Pepper quick wilting, pepper slow wilting, yellowing, Stem borer, leaf blight
- Gampola, Alawathugoda – Clove die back disease, stem borer,
- Elkaduwa, Thenna, Kandy – Nutmeg Leaf fall disease, Stem borer and Scale insects
- Kurunegala, Alawwa, Uhumeeya, Dhabadeniya - Ginger Bacterial and fungal damage, Shoot borer
- Gampaha, Kuliyapitiya, Dhabadeniya – Betel leaf blight, Nematodes damage
- Matale, Pothuhera, Mawathagama – Cocoa dieback, Scale insect damage
- Matara – Cinnamon rough bark disease, leaf canker

5.4.8 Pest and Disease control

The following activities have been carried out by Plant Protection Unit

Field visit	–	428
Farmer training class	–	32
Field day	–	12
Divinaguma programme	–	05
Nursery inspections	–	92
Direct treatments	–	52

5.5 Economics & Market Research on EAC

5.5.1. Studies and Surveys

5.5.1.1 Economic Analysis of Forward Marketing Arrangements for Ginger in Kandy District

A study was started in 2011 to identify positive features and advantages of forward marketing arrangements for ginger in Kandy district and to understand whether the concept can be applied to other EACs as well. Ginger producer's societies in Pujapitiya, Hatharaliyadda, Yatinuwara and Udunuwara DS divisions have involved in forward contract marketing since 2003 to supply ginger to Elephant House Company, a pioneer soft drink producer in the country. In 2011 almost 206 farmers had signed the agreement with the Elephant house and the implementation was facilitated by Kandurata Development Bank. In the study, 64 ginger farmers involved with the agreement (30 from Hathraliyadda, 19 from Poojapitiya and 15 from Udunuwara) were interviewed. Among total farmers in three farmer organizations, 37% had been involved in the agreement since inception. About 70% of farmers were small farmers who were cultivating less than 1/2ac. and all of them were cultivating the "Rangun" variety. According to farmers the Elephant House requests this variety due to its' strong flavour. Majority of farmers had started cultivations in their own lands, but about 80% of farmers in Hathraliyadda had changed lands due to pest/disease problems such as death of plants, yellowing etc. Most severe problem, reported in 2011, was the rotting of yams and about 89% farmers had experienced considerable yield loss due to rotting of yams. Almost all farmers knew the importance of fertilizer for the yield and in 2011 nearly 86% farmers had opted to apply organic matter at the basic land preparation and 85% of them had been applying inorganic fertilizer during the cultivation cycle. Since 2004, Elephant house had bought 280mt. of dried, sliced ginger and had paid Rs.101.9 mn to farmers in 03 farmer organizations. Supply quota allocations of ginger in 2011 were 15mt. for Hatharaliyadda, 15mt. for Poojapitiya and 5mt. for Udunuwara farmer organization. However in 2011 quotas had been surpassed and Hatharaliyadda farmer organization had supplied 18.98mt., Poojapitiya 15.82mt. and 5.02mt.by Udunuwara Farmer Organization. Agriculture Instructors of Hatharaliyadda and Poojapitiya and Science and Technology officer of Udunuwara had devoted to coordinate farmers and encouraged them to fulfil the quota regardless the market forces and their leadership was a main reason for the sustainability of the agreement. Furthermore, farmers in these three farmer organizations have well understood the importance of this agreement for their economy and had tried to supply their individual ginger quota at the best quality required by the company.

5.5.1.2 Estimation of Average Annual Productivity Levels of EAC

A survey was conducted in 2012 to assess the productivity levels (average yield in kg./ha.) of main EAC in major growing districts and also to estimate the average national productivity of each crop. Pepper, cinnamon, clove, coffee and cocoa were selected for the study. For each crop two GN divisions were selected from major growing districts, based on the cultivation extent, and 581 farmers were interviewed randomly. According to the survey average national productivity levels for cinnamon, pepper, clove, coffee and cocoa in 2012 were 501.25kg/ha., 610.85kg/ha, 578.7kg/ha., 258.3kg./ha and 331.1kg./ha respectively.

5.5.2 Extent of EAC

Newly established extent of EAC in 2012 was calculated based on the acreage of 3rd successful inspection completed under the New Planting Assistance Scheme of the department (Table 5.5.2.1)

Table 5.5.2.1: Newly Established Extent (ha) under EAC Assistance Scheme - 2012

District	Cocoa	Coffee	Cinnamon	Cardamom	Pepper	Clove	Nutmeg	Citronella	Arecanut	Total
Kandy	21.2	22.25	13.65		85.7	4.25	17.15		2	164.2
Matale	11.1	4.4	14	3	65.5	2	1.4			101.4
N'elliya		6.8	2.1		5.7			0.72		15.32
Kurunegala		0.7	18.1		18.6	0.1			0.4	37.5
Badulla		10.4	19.1		30.5					60
Moneragala	3.2		19.4		10.3					32.9
Kegalle		0.3	22.2		80.2	0.8				103.5
Ratnapura			75.35		33.6			2		110.95
Colombo			4.1		0.8					4.9
Kalutara			57.7		1.2					58.9
Gampaha		1.3	19.7		27.4					48.4
Galle			65.88		0.5					66.38
Matara		0.6	95.6		1.8					95.6
Hambantota		4.7	93.8		9.6					108.1
Other dis.			*5*							*5*
Total	**35.5**	**51.45**	**525.68**	**3**	**371.4**	**7.15**	**18.55**	**2.72**	**2.04**	**1015.45**

Source: Monthly Progress Reports of the Development Division

Considering above performances and taking 'Agriculture Census 2002' as the base line district wise extent figures and total extent of EAC in 2012 were estimated. (Annex 1)

5.5.3. Production Trends in 2012

Production of EACs was estimated considering exports and local consumption in different sectors in the economy (household consumption based on per capita annual consumption reported by the Dept. of Census & Statistics, industry consumption, and food service industry consumption), imports and withholding stocks in the market channel. Substantial amounts were allocated for unreported exports too. Based on above figures estimated production of EAC is given as follows (table 5.5.3.1)

Table 5.5.3: Estimated Production (Mt.) of EAC s – 2009/2012

Crop	2009	2010	2011*	2012
Cocoa	467	520	525	513
Coffee	3,125	3,164	2,974	3,000
Cinnamon	15,765	16,435	18,250	17,165
Pepper	15,767	17,332	10,834	18,604
Cardamom	61	48	57	80
Clove	3,032	9,551	5,533	4,009
Nutmeg (& mace)	1,740	2,376	2,116	2,002
Areca nut	23,540	24,361	24,485	23,450
Betel	30,454	30,046	30,645	28,200
Citronella oil	7	19	9	13
Ginger(raw)	10,780	12,052	13,663	14,911
Turmeric(raw)	7,747	8,304	9,308	8,708

*Source: Dept. of Census & Statistics & DEA data base. *revised*

5.5.4 Trends in EAC Exports and Export Earnings

Sri Lanka had exported 37,528.0mt of EAC in 2012 earning Rs. 35,321.5mn.of foreign exchange earnings. Growth of the export volume is marginal but foreign exchange earnings had shown a remarkable growth reaching the highest ever figure in the history of EAC sector (Annex II).

When the crop wise export performance is considered, pepper had shown an excellent growth of 107.4% over 2011 owing to the boom harvest experienced throughout the country after several poor harvest seasons. Export earnings too had shown impressive growth of 162.6% from Rs.3,391.4mn.in 2011 to Rs.8,904.4mn.in 2012. Export of cinnamon was stagnating in last 2-3 years but it had shown a significant performance in last year with 14,435mt. of export volume and Rs.16,654.7mn.of earnings. Most of other EACs, (clove, cardamom, nutmeg, cocoa, coffee, and betel) are on the decline. Increased export of ginger shows the importance of development investment to the sector. Among Export of essential oils cinnamon leaf oil had shown a significant progress in 2012 with an increase of 87mt. over 2011. However, export earnings had declined, perhaps due to low prices in the world market. Export of pepper oil and nutmeg oil had increased marginally but export earnings had increased at much higher rates emphasizing the importance of the concept of value addition. Citronella, once a leading oil industry in the EAC sector had not shown a significant progress even in last year.

5.5.5 Exporting Countries

As usual traditional buyers of EAC had played the main role of purchasing EAC even in 2012. Mexico had purchased around 40% of the total cinnamon export and many Latin American countries had purchased large bulks. India was the main buyer of pepper, cloves nutmeg and cocoa and had increased its share in Sri Lankan cinnamon export comparative to previous years. Pakistan had increased its participation in importing Sri Lankan pepper, nutmeg and cinnamon and it may be a result of the free trade agreement with Pakistan.

5.5.6 Behaviour of Price

Farm gate prices of EAC had shown mixed performances in 2012. Prices of pepper, cinnamon, coffee and nutmeg had continued to grow since 2009 but prices of clove, cardamom cocoa, mace and areca nut, which were on the increasing trend since 2009, had declined marginally. Prices of pepper and cinnamon quills had shown impressive growth since 2009 and growth rates for the period were 189% and 68% respectively (Annex III).

5.5.7 Trends in EAC Imports in 2012

Almost all the Export Agriculture Crops had been imported in 2012 but the volume had declined from 15,387.4mt.in 2011 to 11,456.2mt. in 2012, from which import volume of cocoa and turmeric had declined from 36% and 11% respectively. Import of ginger had increased from 179% and it reflects the need for increased investment for the development of local ginger industry. Import expenditure too had declined by 24.6% from Rs.6,023.3mn. in 2011 to Rs.4,539.6mn. in 2012. Import expenditure of cocoa and turmeric had declined from 24% and 40% respectively during the period. Reduction of cocoa import is a result of reduced re-export of cocoa products, which can be explained as a reflection of the recession in the local value addition industry (Annex IV).

5.6. Publications

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Annexure I : Estimated Extent(Ha) of EAC by Districts – 2012

District	Cinnamon	Pepper	Cloves	Cardamom	Coffee	Cocoa	Nutmeg	Arecanut	Betel	Citronella	Sub-Total	Ginger	Turmeric	Grand Total
Kandy	100	5,828	2,999	719	1,310	280	784	2,299	78	-	14,397	334	305	15,036
Matale	233	6,239	669	1,132	649	1,053	66	1,178	58	-	11,277	54	95	11,426
Nuwaraeliya	34	874	337	116	1,072	5	3	538	10	-	2,989	152	138	3,279
Kurunegala	150	2,979	403	8	705	151	50	891	1,040	-	6,377	601	90	7,068
Badulla	181	2,477	55	10	335	30	-	1,557	61	-	4,706	48	23	4,.777
Monaragala	77	1,776	6	-	192	599	1	1,135	81	-	3,868	4	2	3,874
Galle	11,075	458	192	-	107	3	2	716	240	-	12,792	89	56	12,937
Matara	8,320	771	489	34	172	4	5	938	87	-	10,819	105	73	10,997
Hambantota	3,015	1,796	54	1	116	-	-	522	41	788	6,332	17	15	6,364
Colomdo	206	241	59	1	58	2	2	154	81	-	804	87	9	900
Gampaha	226	1,641	114	2	368	8	6	1,123	687	-	4,175	289	89	4,550
Kalutara	3,287	309	130	3	139	4	4	686	231	-	4,793	132	47	4,972
Ratnapura	3,914	3,192	403	338	226	23	6	1,887	145	389	10,523	66	44	10,633
Kegalle	226	3,029	1,702	434	594	173	43	1,524	185	-	7,911	236	156	8,303
Other **Districts**	5	60		-	50	-	-	696	228	-	1,039	52	25	1,116
Total	**31,049**	**31,667**	**7,612**	**2,798**	**6,093**	**2,336**	**973**	**15,844**	**3,253**	**1,177**	**102,802**	**2,263**	**1,167**	**106,232**

*provisional

Source: Census of Agriculture -2002, Monthly progress report of Department of Export Agriculture (collected by development division), Agricultural Statistics – Department of Census & Statistics.

Annexure II : Export Volume and Value of Export Agriculture Crops – 2011/12

Commodity	Units	2011*	2012	Growth% 2011/12
Cinnamon	Vol (mt.)	13,485.3	14,435.0	7.0
	Val (Rs.mn)	13,394.4	16,654.7	24.3
Cinnamon Leaf Oil	Vol (mt.)	231.2	318.2	37.6
	Val (Rs.mn)	498.6	482.7	-3.2
Cinnamon Bark Oil	Vol (mt.)	30.1	9.0	-70.3
	Val (Rs.mn)	351.0	259.5	-26.1
Clove	Vol (mt.)	3,570.5	1,427.0	-60.0
	Val (Rs.mn)	3,676.3	2,092.1	-43.1
Clove Stems	Vol (mt.)	1,624.9	1,487.1	-8.5
	Val (Rs.mn)	235.3	247.7	5.3
Clove Oil	Vol (mt.)	13.0	3.7	-71.5
	Val (Rs.mn)	45.6	33.0	-27.7
Cocoa & cocoa Products@	Vol(mt.)	5,190.3	3,426.7	-34.0
	Val (Rs.mn)	2,688.5	2,182.6	-18.8
Coffee	Vol(mt.)	10.4	9.6	-7.5
	Val (Rs.mn)	8.7	8.0	-7.5
Pepper	Vol(mt.)	5,056.6	10,487.3	107.4
	Val (Rs.mn)	3,391.4	8,904.4	162.6
Pepper Oil	Vol(mt.)	8.6	12.3	43.5
	Val (Rs.mn)	151.2	278.9	84.5
Cardamom	Vol(mt.)	11.5	10.5	-9.2
	Val (Rs.mn)	65.4	32.2	-50.8
Cardamom Oil	Vol(mt.)	1.6	0.9	-44.6
	Val (Rs.mn)	75.1	43.5	-42.1
Citronella	Vol(mt.)	11.7	12.6	7.6
	Val (Rs.mn)	28.6	28.2	-1.7
Nutmeg	Vol(mt.)	1,669.0	1,390.2	-16.7
	Val (Rs.mn)	2,067.9	1,948.8	-5.8
Mace	Vol(mt.)	205.0	192.1	-6.3
	Val (Rs.mn)	756.0	578.9	-23.4
Nutmeg Oil	Vol(mt.)	22.2	25.9	16.4
	Val (Rs.mn)	235.5	333.8	41.7
Mace Oil	Vol(mt.)	0.003	0.002	-33.3
	Val (Rs.mn)	0.04	0.03	-25.0
Areca nut	Vol(mt.)	2,176.4	2,120.6	-2.6
	Val (Rs.mn)	273.8	408.4	49.2
Betel	Vol(mt.)	2,845.0	1,934.2	-32.0
	Val (Rs.mn)	758.8	637.7	-16.0
Vanilla	Vol(mt.)	0.2	0.3	40.7
	Val (Rs.mn)	5.3	4.6	-12.0
Vanilla Oil	Vol(mt.)	0.03	-	-
	Val (Rs.mn)	0.13	-	-
Lemon Grass Oil	Vol(mt.)	1.3	0.5	-64.1
	Val (Rs.mn)	4.6	1.9	-58.9
Total EAC	Vol(mt.)	36,164.8	37,303.5	3.1
	Val (Rs.mn)	28,712.2	35,161.5	22.5
Ginger	Vol(mt.)	138.8	194.5	40.1
	Val (Rs.mn)	152.0	122.9	-19.2
Ginger Oil	Vol(mt.)	1.1	0.9	-21.7
	Val (Rs.mn)	17.7	13.2	-25.7
Turmeric	Vol(mt.)	31.1	29.2	-6.1
	Val (Rs.mn)	30.8	23.9	-22.4
Total (Ginger & Turmeric)	Vol(mt.)	171.0	224.6	31.3
	Val (Rs.mn)	200.5	160.0	-20.3
Total (with Ginger & Turmeric)	Vol(mt.)	36,335.8	37,528.0	3.3
	Val (Rs.mn)	28,912.7	35,321.5	22.2

Source: Sri Lanka Customs * revised @ with re-exports vol.-volume val-value

Rounded Off Figures; Where necessary, each volume & value figure has been taken to the nearest 1st decimal place or it's nearest decimal place..But growth % has been calculated with actual figures. So growth % can be an apparent slight discrepancy if calculate with these figures for some values.

Annexure II1: Average Prices of Export Agricultural Crops (Rs/kg) in 2009/2012

Crop	Price	Year				Growth % 2011/12
	(Rs/Kg.)	2009	2010	2011	2012	
Cocoa	FG	210.41	282.49	322.13	266.92	-17.1
	AU	268.60	359.83	347.16	346.94	-0.1
	WM	326.01	354.26	332.71	304.31	-8.5
Coffee	FG	220.92	223.63	234.09	249.51	6.6
	AU	293.85	268.00	266.16	251.49	-5.5
	WM*	193.75	207.51	282.20	309.54	9.7
Pepper	FG	287.43	342.14	691.90	832.05	20.3
	AU	294.69	364.31	703.46	826.83	17.5
	WM	326.98	452.24	726.58	934.61	28.6
Clove	FG	484.66	542.99	1,250.35	1,159.70	-7.2
	AU	529.67	592.13	1,376.14	1,225.95	-10.9
	WM	534.69	592.06	1,291.82	1,367.58	5.9
Cinnamon Quills	FG	621.95	726.57	921.85	1,042.08	13.0
	AU	558.82	589.02	822.82	889.53	8.1
Nutmeg	FG	331.87	459.62	742.53	838.45	12.9
	AU	367.71	512.97	790.02	909.83	15.2
	WM	1,018.44	1,430.92	2,442.44	3,118.39	27.7
Mace	FG	857.37	1,716.73	2,847.77	2,096.51	-26.4
	AU	936.99	2,001.04	3.092.01	2,374.48	-23.2
	WM	1,103.21	2,304.88	3,758.72	3,141.56	-16.4
Cardamom	FG	1,732.32	3,320.96	2,713.12	1,945.75	-28.3
	AU	1,926.97	3,592.12	2,482.81	1,300.00	-47.6
	WM	1,642.92	3,074.94	2,486.19	1,667.93	-32.9
Betel (Rs./1000 leaves)	FG	1,383.33	2,208.29	2,042.19	2,018.96	-1.1
Areca nut	FG	107.28	115.28	215.31	201.25	-6.5
	AU	115.27	128.63	226.46	284.22	25.5
Vanilla	WM	3,391.00	2,800.00	2,848.00	3,187.50	11.9
Ginger (Raw)	FG	130.61	114.67	76.51	106.78	39.6
Turmeric (Raw)	FG	31.02	50.75	47.70	36.54	-23.4

Source: ERU data base

FG: Farm-gate Price; AU: Auction Price; WM: World Market Price

* Robusta coffee

Annexure 1V: Import Volume and Value of Export Agriculture Crops – 2011/12

Commodity	Units	2011*	2012	Growth% 2011/12
Cinnamon	Vol (mt.)	43.49	60.50	39.1
	Val (Rs.mn)	45.38	56.94	25.5
Cinnamon Leaf Oil	Vol (mt.)	0.01	0.07	550.0
	Val (Rs.mn)	0.06	0.23	277.7
Cinnamon Bark Oil	Vol (mt.)	0.24	0.02	-91.6
	Val (Rs.mn)	0.19	0.02	-88.6
Clove	Vol (mt.)	25.93	1.67	-93.6
	Val (Rs.mn)	15.55	2.79	-82.1
Clove Oil	Vol (mt.)	0.02	2.08	9,819.0
	Val (Rs.mn)	0.72	5.91	725.6
Cocoa & cocoa Products	Vol(mt.)	10,630.43	6,754.67	-36.5
	Val (Rs.mn)	4,900.33	3,693.67	-24.6
Coffee	Vol(mt.)	36.37	57.94	59.3
	Val (Rs.mn)	30.67	43.74	42.6
Pepper	Vol(mt.)	24.92	3.97	-84.1
	Val (Rs.mn)	9.43	4.78	-49.3
Pepper Oil	Vol(mt.)	0.07	0.20	185.9
	Val (Rs.mn)	0.74	5.01	575.0
Cardamom	Vol(mt.)	6.31	14.95	136.8
	Val (Rs.mn)	7.16	14.60	104.0
Cardamom Oil	Vol(mt.)	0.67	0.47	-30.1
	Val (Rs.mn)	27.20	16.23	-40.3
Citronella	Vol(mt.)	2.60	1.21	-53.5
	Val (Rs.mn)	3.43	2.12	-38.1
Nutmeg	Vol(mt.)	9.75	17.30	77.4
	Val (Rs.mn)	19.09	40.33	111.3
Mace	Vol(mt.)	0.30	-	-100.0
	Val (Rs.mn)	1.06	-	-100.0
Nutmeg Oil	Vol(mt.)	3.60	3.91	8.5
	Val (Rs.mn)	26.68	38.53	44.4
Arecanut	Vol(mt.)	72.01	1.01	-98.6
	Val (Rs.mn)	7.95	0.26	-96.7
Betel	Vol(mt.)	0.01	-	-
	Val (Rs.mn)	0.006	-	-
Vanilla	Vol(mt.)	0.007	0.05	600.0
	Val (Rs.mn)	0.005	0.07	1,382.1
Vanilla Oil	Vol(mt.)	2.11	6.16	191.8
	Val (Rs.mn)	3.34	8.40	151.3
Lemon Grass Oil	Vol(mt.)	1.46	0.47	-67.7
	Val (Rs.mn)	2.73	1.01	-62.9
Total EAC	Vol(mt.)	10,860.24	6,926.44	-36.2
	Val (Rs.mn)	5,100.98	3,929.65	-23.0
Ginger	Vol(mt.)	258.63	721.60	179.0
	Val (Rs.mn)	112.45	127.16	13.1
Ginger Oil	Vol(mt.)	1.68	0.63	-62.6
	Val (Rs.mn)	13.89	6.53	-53.0
Turmeric	Vol(mt.)	4,266.87	3,807.53	-10.8
	Val (Rs.mn)	795.97	476.23	-40.2
Total (Ginger & Turmeric)	Vol(mt.)	4,527.17	4,529.76	0.1
	Val (Rs.mn)	922.31	609.92	-33.9
Total (with Ginger & Turmeric)	Vol(mt.)	15,387.42	11,456.20	-25.5
	Val (Rs.mn)	6,023.29	4,539.56	-24.6

Source: Sri Lanka Customs

* provisional

Annexure V : Deployment of Extension Officers – 2012

KANDY – EOs' Ranges

01	Galagedara	09	Rambukpitiya
02	Udunuwara	10	Wattegama, Huluganga
03	Kurunduwatta	11	Kundasale
04	Gampola/ Delpitiya	12	Hatharaliyadda
05	Galaha/ Talatuoya	13	Harispaththuwa
06	Pujapitiya / Alawathugoda	14	Medapitiya
07	Theldeniya	15	Yatinuwara
08	Udadumbara		

KEGALLE- EOs' Ranges

01	Mawanalla	08	Aranayake
02	Ussapitiya	09	Ruwanwella
03	Pinnawala/ Deliwala	10	Yatiyantota
04	Kegalle	11	Panawela
05	Warakapola	12	Bulathkohupitiya
06	Daraniyagala	13	Dadigama
07	Batuwatta/ Yattogoda		

COLOMBO – EOs' Ranges

01	Avissawella
02	Homagoma
03	Malambe

MATALE – EOs' Ranges

01	Palapathwala	06	Yatawatta
02	Ukuwela	07	Hunuketala
03	Thanna	08	Pallapola
04	Rattota	09	Wahakotte
05	Weragama	10	Alugolla

KALUTARA – EOs' Ranges

01	Maduruwela	05	Horana / Ingiriya/ Bulathsinghala
02	Bandaragama	06	Iththapana
03	Kaluthara	07	Baduraliya
04	Mathugama	08	Agalawatta

NUWARA ELIYA - EOs' Ranges

01	Ginigathhena	03	Rikillagashada/Hanguranketha
02	Kothmale	04	Wlapane

GAMPAHA – EOs' Ranges

01	Dompe	07	Badalgama
02	Udugampola	08	Pallewela
03	Gampaha	09	Biyagama
04	Mahara	10	Meerigama
05	Wake	11	Divulapitiya
06	Attanagalla	12	Minuwangoda

KURUNAGALA - EOs' Ranges

01	Polgahawela,	07	Dambadeniya
02	Dodamgaslanda	08	Katugampola/ Kuliyapitiya
03	Mawathagama	09	Alawwa
04	Rambadagalle	10	Bingiriya/ Ududbaddawa
05	Karandagolla/Werawella	11	Wariyapola
06	Kuliyapitiya	12	Malsiripura

HAMBANTOTA – EOs' Ranges

01	Okewela	05	Walasmulla
02	Beliaththa	06	Thangalla
03	Middeniya	07	Weerakatiya
04	Katuwana		

BADULLA – EOs' Ranges

01	Soranatota / Badulla	03	Nikapotha / Bandarawela
02	Haldummulla / Haputhale	04	Uwaparanagama / Walimada

GALLE – EOs' Ranges

01	Aluthwela	07	Athkandura
02	Hiniduma	08	Alpitiya
03	Habaraduwa	09	Karandeniya
04	Ambalangoda	10	Baddegama/ Hikkaduwa
05	Balapitiya	11	Niyagama
06	Akmeemana	12	Yakkalamulla

MATARA – EOs' Ranges

01	Deniyaya	06	Devinuwara
02	Akurassa	07	Deiyandara
03	Pasgoda	08	Kamburupitiya
04	Hakmana	09	Malimbada
05	Weligama	10	Matara

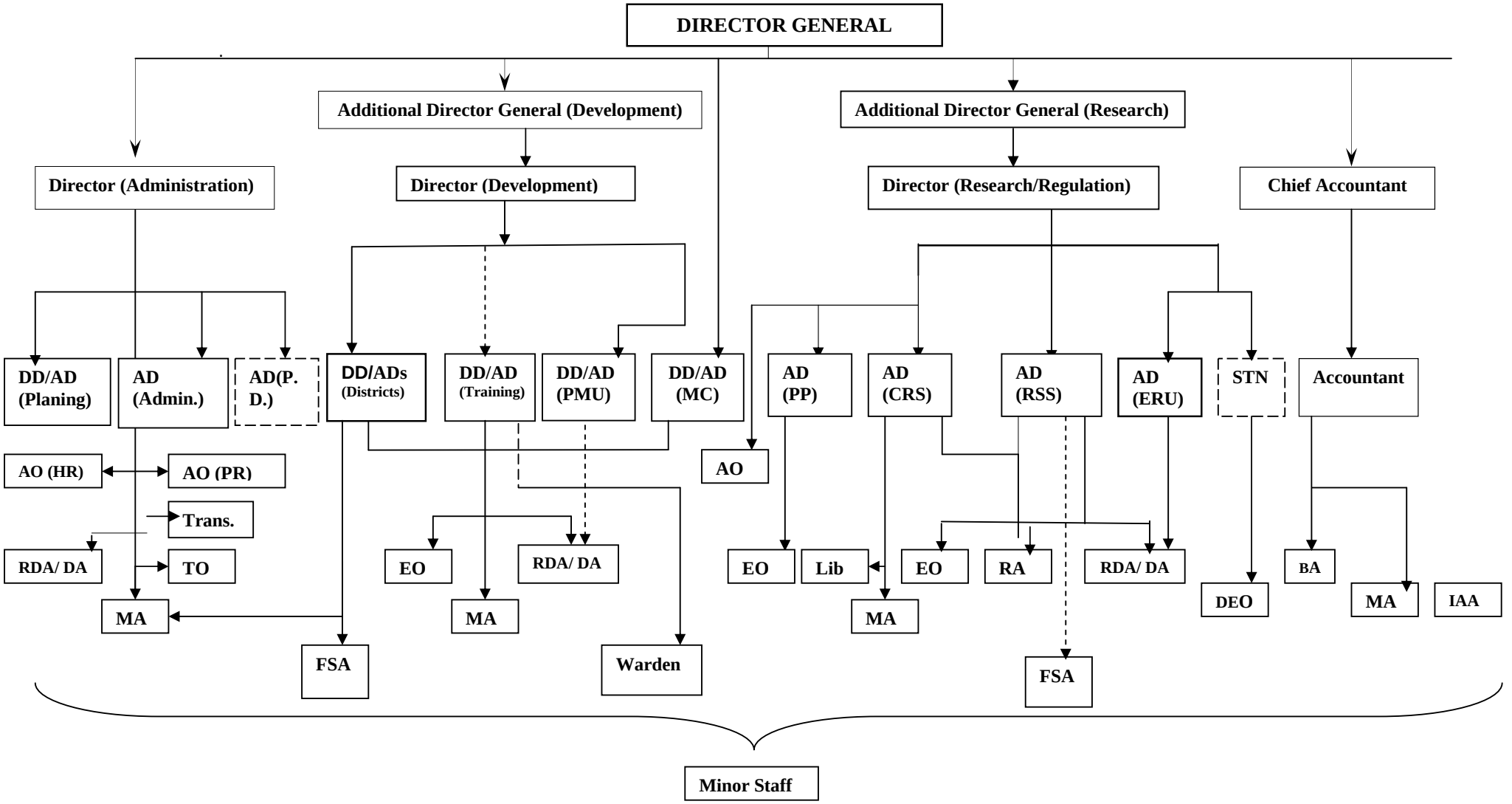
RATHNAPURA – EOs' Ranges

01	Waligepola/Elapatha/Niwithigala	05	Godakawela
02	Ehaliyagoda/Rathnapura	06	Kalawana
03	Kolonna/Embilipitiya	07	Palmadulla
04	Ayagama	08	Balangoda

MONARAGALA – Eos' Ranges

01	Hingurukaduwa/Wellawaya	05	Padiyathalawa
02	Bibile	06	Madulla
03	Butthala	07	Badalkumbura
04	Medagama		

Annexure VI : ORGANIZATION CHART - DEPARTMENT OF EXPORT AGRICULTURE -2012



DD - Deputy Director, **AD** - Assistant Director,**P.D**- Physical & Development , **PMU** -Progress monitoring Unit, **MC**- Mass Communication, **PP** – Plant Protection, **CRS –** Central Research Station**, RSS** – Research Sub Station, **ERU**- Economic Research Unit **, STN** – Statistician(attached from **DCS**),**AD**-Assistant Director (attached from Ministry of Agriculture)) **AO (HR)**-Administrative Officer- Human Resource , **AO (PR**)- Administrative Officer -Physical Resource, **Tran.** – Translator**, RDA**-Research and Development Assistant**, DA**- Development Assistant, **BA**-Budget Assistant, **TO** -Technical Officer, **MA**- Management Assistant, **IAA**-Internal Audit Assistant, **Lib**-Librarian, **EO** – Extension Officer, **RA**- Research Assistant, **DEO**-Data Entry Operator , **FSA** –Farm Service Assistant.


අපනයන කෘෂිකර්ම දෙපාර්තමේන්තුව - අනාගතය සඳහා වූ දිනකට
ஏற்றுமதி விவசாயத் திணைக்களம் - வளமான எதிர்காலத்திற்கு
DEPARTMENT OF EXPORT AGRICULTURE - FOR A PROSPEROUS FUTURE