



Annual Performance Report 2013



Department of National
Botanic Gardens



Department of National Botanic Gardens

Annual Performance Report
Year 2013

Department of National Botanic Gardens
P.O. Box 14, Peradeniya

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INTRODUCTION



Arboretum at Royal Botanic Gardens



providing information to Visitors



conducting field assessments

1.1 BACKGROUND

All National Botanic Gardens in Sri Lanka are maintained and managed by the Department of National Botanic Gardens. The Royal Botanic Gardens, Peradeniya (1821); Botanic Gardens in Hakgala (1861) and Botanic Gardens, Henarathgoda, Gampaha (1876) were established by the British to conduct experiments on exotic economic plants and explore plant wealth in the island for economic and environmental development in Sri Lanka. The botanic garden in Mirijjawila is the first botanic garden developed by local experts after 130 years and opened to public in 2013.

In addition to those Botanic Gardens, a National Medicinal Plant Garden was established in 1950s at Ganewatta to promote conservation, sustainable use and management of Medicinal Plants in Sri Lanka. Recently, another new botanic garden is being established in Avissawella for ex-situ conservation of Wet Zone plants with expectations of developing herbal and floriculture in the area and contributes to the economic development of the country.

The National Herbarium of the Department of National Botanic Gardens carry out plant authentication work and research programmes in plant taxonomy and other aspects of botanical sciences. The Floriculture Development and Research Unit focuses on floriculture research, supporting and encouraging viable ventures for floriculture promotion in the country via floriculture development activities through different media/activities/programmes. The School of Floriculture offers training and education programmes including one day short term courses, 1 year and 2 year diploma courses.

Botanic gardens also provide an area for leisure where plants from around the world depict the diversity and beauty of the plant kingdom to share knowledge and expertise in conservation, biodiversity, floriculture.

VISION

To become scientifically and aesthetically finest Botanic Gardens in the Tropics, while conserving plants and contributing to the economic growth of Sri Lanka

MISSION

To provide opportunities for the public to study, sustainably conserve, and admire plant resources in natural and manmade environments

1.2 MAIN TASKS

- Planning and implementation of *ex-situ* conservation strategies for the conservation of Sri Lankan plants.
- Carry out activities to disseminate authentic information and technical expertise on plants and plant-related industries of Sri Lanka using educational and communication strategies.
- Conduct diverse research and implement technologies to develop floriculture industry in Sri Lanka.
- Management and Development of National Botanic Gardens at high standards.
- Prepare development plans for the establishment of new botanic gardens in appropriate places.
- Plan and implement research and technical programs needed to popularize amenity Horticulture in Sri Lanka.
- Provide technical advice to conserve Sri Lankan plants of historic importance.
- Maintaining the health of the sacred bo-tree at Anudadhapura.



A Roses nursery at Hakgala Botanic Gardens

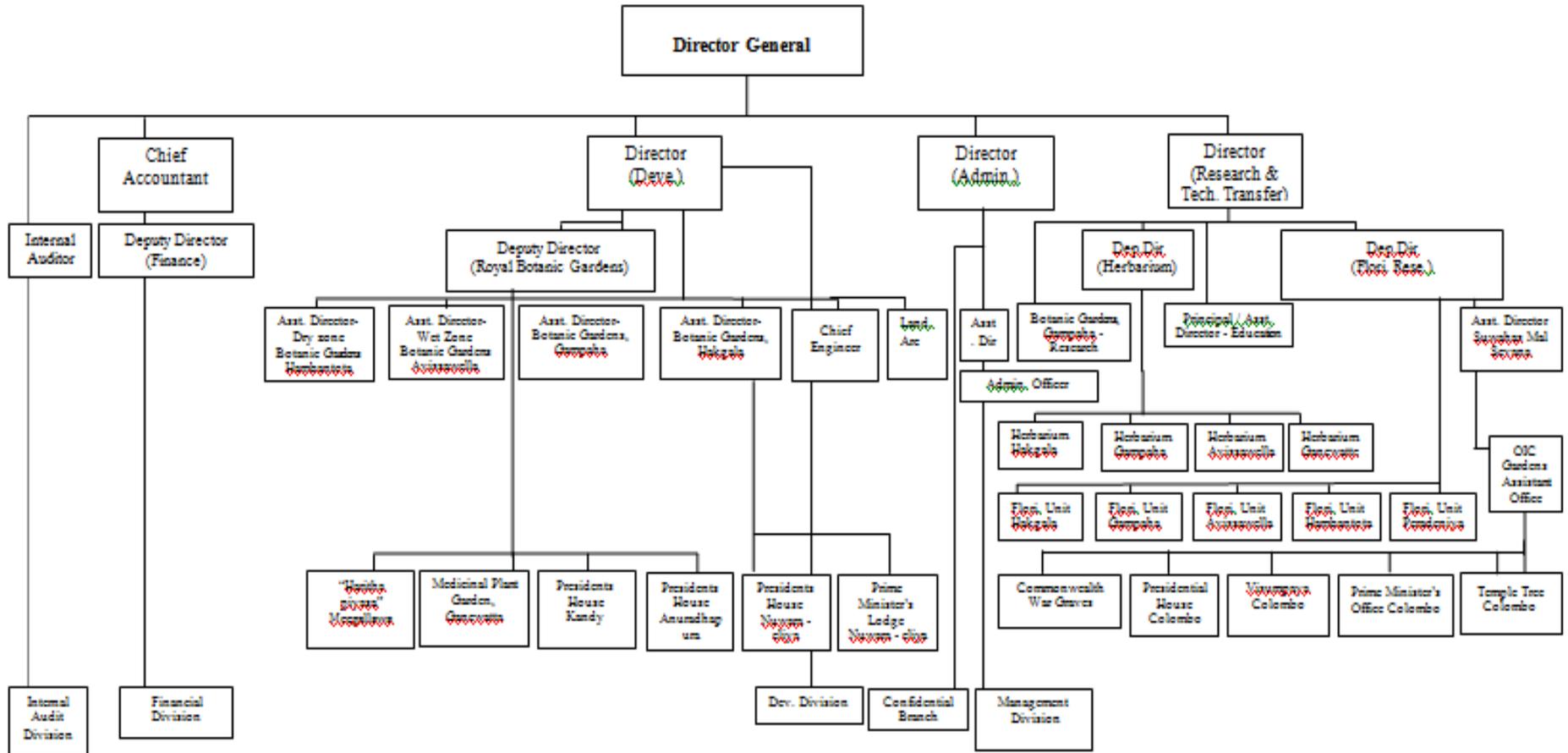


well maintained gardens



looking after the health of Sri Maha Bhodi

1.3 ORGANIZATIONAL CHART



1.4 UNITS UNDER THE DEPARTMENT

Royal Botanic Gardens, Peradeniya (RBG)

Being established in 1821 the Royal Botanic Gardens, Peradeniya plays a key role in ex-situ conservation of plants and in education of people on plants while contributing to the economic and environmental development in Sri Lanka.

The 61.25 ha. garden situated near Kandy is popular as a place for education, botanical research, ecology and horticulture as well as for recreation.

It includes about 4,500 species of plants including orchids, spices, medicinal plants and palm trees and attracts over 1.3 million visitors annually.

National Herbarium

The National Herbarium is the place where dried herbarium specimens of the flora of Sri Lanka and many other specimens of exotic and cultivated plant species are preserved for systematic studies. Over 160,000 herbarium specimens are conserved at appropriate conditions for reference purposes. About 3,500 books, periodicals and a historical collection of botanical illustrations related to flora are also found in this Herbarium.

The collection of plant specimens at the herbarium serve a variety of purposes such as Taxonomic Research, Storage of Reference Material and Vouchers, Databank for biodiversity, Public Outreach, Teaching and Plant identification.

Floriculture School

The school of floriculture and Landscaping is situated at RBG. It provides 2 diploma courses and other short term certificate courses.

Floriculture Research & Development Unit, Peradeniya

The Floriculture Research and Development Unit is mandated to conduct research programs related to the floriculture and also contribute to the development of that sector in Sri Lanka.

The unit actively engages in providing training programs, on-site advisory services, information on investment opportunities in the sector and providing assistance in the form of equipment, quality planting material for growers as well as establishing grower organization at district level for the development of the sector.

Hakgala Botanic Gardens

Botanic Garden at Hakgala, established in 1861, is the second largest Botanic garden in the island.

The flora of the gardens is distinctly sub tropical and consists of representatives of the indigenous, montane flora mix together with those introduced from other countries, systematically planted in various sections of the gardens.

Henarathgoda Botanic Gardens

Henarathgoda Botanic Gardens, Gampaha, established in 1876 for introduction of rubber to Sri Lanka, possesses an array of botanical and horticultural attractions with a rich history. It is situated in Gampaha, and the total extent is 43 acres. This garden consists of an important plant collection of about 2,000 plant species of Sri Lanka and from other countries.

Ganewatte Medicinal Plant Garden

Medicinal Plant Garden, Ganewatte (GMPG) is situated in the north western province in Kurunegala District. This 52 acres garden is the home for a wide range of medicinal plants .

GMPG engages in cultivating and trade in medicinal plants while conserving the rare species which are not easily available, to demonstrate systematic plantation of medicinal plants and to conserve the rare species.

Mirijjawila Dry Zone Botanic Gardens

Mirijjawila Dry Zone Botanic Gardens is the first botanic gardens in Sri Lanka designed by the local experts after 130 years. The garden is 300 acres in extent. It is located in Hambantota District and the development activities were started in 2006. It was opened to the public in 2013.

The main purposes of the new garden are to conserve dry and arid zone plants ex-situ to conduct on studies about plants that are lesser known and underutilized in the dry zone; promote the herbal industry; promote economic development in the area and provide education and training on botany and floriculture in the dry zone.

Illukowita Wet Zone Botanic Gardens (under development)

This botanic garden is situated near Avissawella and development started during 2008. The Botanic Garden is 105 acres in extent.

Ex-situ conservation of wet lowland plants is the main purpose of the garden and it will showcase various species of plants with economic, aesthetic and ecological value and also serve as a recreation area.

It is planned to open this garden in 2014.

Suwahas Mal Sevana, Colombo

Being located in strategic place like Narahenpita it is a key unit of the department which is marketing floriculture products of growers organized in various “Suwahas Mal” flower growers’ organizations in various parts of the island.

The showroom established at Narahenpita provides facilities for growers to sell their cut flowers and value added plant products.

Residential gardens of H.E. the President and Hon. Prime Minister

The Department maintains the Residential gardens of H.E. the President in Colombo, Kandy, Nuwara Eliya, Anuradhapura and residential gardens of Hon. Prime Minister in Colombo and Nuwara Eliya at high standards.

Commonwealth War Graves

Commonwealth War Cemeteries located at Kandy, Jawatte, Borella and Trincomalee for comomeration of military service personnel of Commonwealth countires who died in the world I and II are managed by the Department.

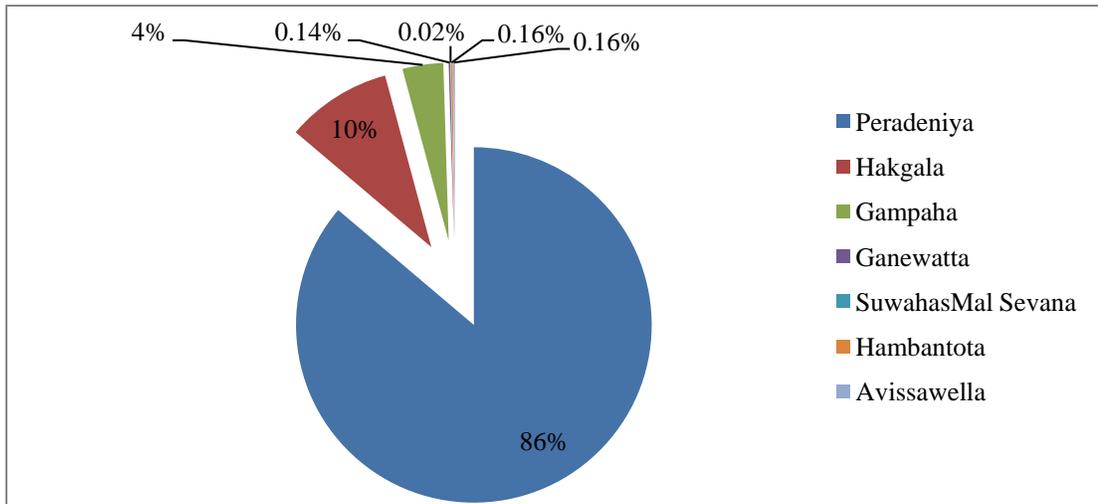
Haritha Piyasa, Meegallawa (under development)

Meegallewa Haritha Piyasa is situated in the north-western province about 60 miles away from Kurunegala and currently the total extent in 6 acres. It is under development and will operate as a training center to provide training for the internal staff as well as for local communities on floriculture. And also will operate as a plant propagation centre.

PERFORMANCE SNAPSHOT

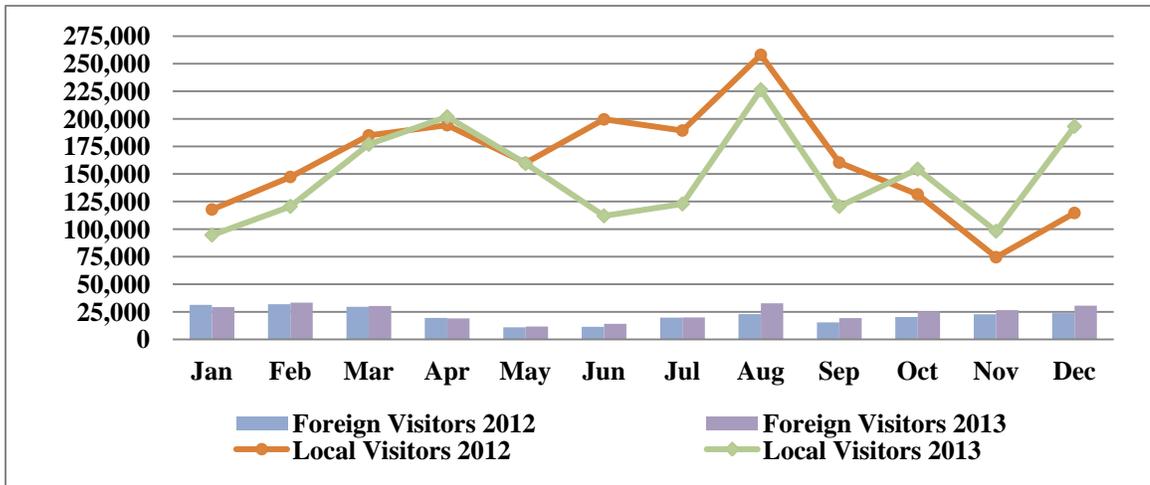
2.1. REVENUE 2013

- The total revenue earned from admission fees, plant sales, and rents etc. in 2013 is Rs. 416.8 Million. It is an 9 % increase of revenue compared to the previous year (Rs. 382.8 Mn). The chart mentioned below shows the percentages out of total revenue obtained by each gardens and units under the department. (Please refer Appendix: 3 – Financial Details from page 87 to 93 for more information)



2.2. VISITATIONS 2013

- The total number of visitations to the gardens was over 2 million (2,076,523) in this year as well. The number of foreign visitors to botanic gardens in 2013 (293,454) shows a 13% increase when compared to the last year (259,545). Number of visitors at the gardens in 2013 compared with the previous year (2012) is shown in the chart below. (Please refer Appendix: 2 – Visitor numbers – year 2013 from page 82 to 86 for more information).



2.3. EXPENDITURE 2013

- Development activities of 3 main gardens and other units were carried out as planned and 80.3% of overall financial performance was achieved. There was a delay in receiving funds from treasury in the last 2 months of this year for activities completed under the capital allocations. The table listed below shows the expenditure of allocations of the Department during this year. (Please refer Appendix: 3- Financial Details from page 87 to 89 for more information)

Description	Net Provision (Rs. Mn.)	Total Expenditure (Rs. Mn.)	Expenditure as a percentage
Capital Expenditure	448.15	320.8	71.6
Recurrent Expenditure	226.95	208.3	91.8
Total	675.1	529.1	78.4

2.4. SCIENTIFIC ACTIVITIES 2013

- Scientific activities were expanded as planned and several research programmes related to floriculture development in the country, plant taxonomy and systematics were carried out during this year. Training programmes for different groups of the public, plant explorations and planting programmes were also carried out as planned. The table below shows a snapshot of programmes carried out by the department.

Research programmes carried out (Floriculture Taxonomy, etc...)	28
Research papers published	13
Training of people at gardens	
Bio diversity conservation	333
Plant conservation	1161
Floriculture	15,247
School children facilitated on their projects related to floriculture	34
Landscaping	2,037
Plant systematic and herbarium management	1171
3 month Diploma	96

Other related training on plants, nursery management, post harvesting techniques etc..	3,048
Plant production at gardens (out door, in door, roses, etc..)	438,823
Plants Sales	253,403
Field explorations	59
New trees added to the Arboreta of the gardens	7,120
Other programmes	
National Red Listing Project	Updating the red list of plants is being carried out with intensive exploration programmes.
National workshops held	Five day residential workshop on Plant Molecular Systematics was held in March at the National Herbarium with the participation of eminent botanists as resource personals.
Botanical Survey	Plant explorations, collection of plant specimens, mainly threatened plants of dry and wet zone was continued under the botanical survey.
National Symposium on Floriculture	The 6 th National Symposium on Floriculture Research (NaSFloR) was conducted on 19 th December 2013 in collaboration with Council for Agriculture Research Policy (CARP).
New Hybrids	Two hybrids of Anthurium and orchid were introduced during this year and 08 other hybrids of Orchids and Anthuriums are being processed at the field.

CONTRIBUTION TO THE NATIONAL DEVELOPMENT POLICY FRAMEWORK - MAHINDA CHINTHANA: *VISION FOR THE FUTURE*

The Department of National Botanic Gardens is working towards the development policies of the Mahinda Chinthana - *Vision for the Future*; the Development Policy Framework of the Government while achieving its objectives considering as a synopsis for implementing the corporate plan (2006-2015) of the department.

In the corporate plan of the Department there are four strategic themes considered

- Research
- Development
- Education and Training (including extension and outreach education courses) and *as a cross-cutting theme* - Managing the Operation effectively

The programmes and projects of the corporate plan of the department are aligned with the policies of the Mahinda Chinthana- *Vision for the Future*: Development policy framework (2010-2016) of the Government related to the Departmental mandate.

The relevant programmes undertaken by the Department are listed below parallel to the Mahinda Chinthana- *Vision for the Future*: Development policy framework (2010-2016) of the Government.

- **Statement of Ten Year Programme (Haritha Lanka) - under Mission 2: Saving the Fauna, Flora and Ecosystems: *Establish more botanic gardens and field gene banks and mandate them to undertake ex-situ conservation of bio-diversity in all bioclimatic regions of Sri Lanka.***

The department actively engaged in establishing more botanic gardens to undertake ex-situ conservation of plants and preserve plant diversity in all bioclimatic regions of Sri Lanka.



School children enjoying nature at the Dry Zone Botanic Gardens, Hambantota



Flora at the Dry Zone Botanic Gardens, Hambantota

There are distinct zones of vegetation within Sri Lanka, and considerable economic interest in dry zone vegetation. A new Garden in the Dry Zone, near Hambantota is being developed. Another garden is being developed in the wet zone. In summary, there are 5 programmes planned:

- Ex-situ Conservation of plants;
- Collection of lesser known and underutilized plants;
- Specialty in landscape improvement;
- Herbal Industry Promotion;
- Education and training on botany and floriculture.

The new gardens will have many attractions and features. These include herbaceous gardens, comprising mostly rare and endangered herbs of Sri Lanka. There will also be plants having special botanical interest, planted outdoors according to a taxonomic order.

➤ **Statement of Mahinda Chinthana: *Vision for Future - 10 year development framework: “Sri Lanka is sitting on a treasure chest, enabling it to assuming a lead role in tropical floriculture”***

The Gardens promote domestic floriculture equipping the farmers with required technology and other skills through appropriate research programmes. The department aims at developing of floriculture industry especially in Hambantota area targeting export markets has a good potential after opening of Mattala International Air Port with cargo services and as a new tourism development zone declared under Mahinda Chinthana Programme.

The new Botanic Garden in Hambantota supports the development of floriculture to become the leading Zone for floriculture in a very practical way by providing technical and training programmes and capacity building programmes for growers around the area.

➤ **Statement of Mahinda Chinthana: *Vision for Future- 10 year development framework – theme under the Technical & Vocational Education: “Skills for life-jobs for skills”; providing nationally and internationally recognized training in keeping with advancing technology meeting the demand of labour markets both domestic and abroad.***



One of the hybrids developed by the floriculture unit at the Department



Students of 3 month course gaining hands on skills on bedding

The Department of National Botanic Gardens provides nationally and internationally recognized training on floriculture and landscaping in keeping with advancing technology meeting the demand of labour markets both domestic and abroad. It provides opportunities for youth and interested individuals who are engaged in floriculture sector by offering an externally accredited one year National Diploma Course and 2 year Higher National Diploma Course in Floriculture and Landscape Gardening/design to gain higher qualifications with job oriented training.

Short Term (One-day, two-day) training sessions and a Three-month certificate course on Floriculture and Landscape Design are also conducted by the department for the public, school leavers, small businesses, students and other specialist audiences.

- **Statement of Mahinda Chinthana: Vision for Future- 10 year development framework:**
“Tourism products will be diversified with special emphasis on eco-tourism, tapping the tourism potential of the natural topography and ecological values of the country”

Gardens act towards promoting eco tourism in the country diversifying the gardens activities focusing on the eco-tourism aspects of gardens and concerning how we can make use of the education and awareness programmes implemented by the Gardens towards eco tourism.

- **Statement of Mahinda Chinthana: Vision for Future- 10 year development framework: ‘People are empowered to develop, and sustain their livelihoods and improve their standards of living’**

As a most visited cultural and scientific institution in Sri Lanka, the Gardens contribute significant economic and social benefits to the community. The inclusion of a visit to the Gardens as part of a tourism itinerary very often results in a prolonged stay in the area, with direct economic benefit to local businesses. The multiplier effect from this, together with the significant investment in capital programs and services, contributes to economic growth while at the same time, helps to make the Gardens more accessible and enjoyable.



Visitors relaxing at lawn of Royal Botanic Garden



Training work shop conducted for growers on floriculture

The Department of National Botanic Gardens contributing to promotion and development skills of floriculture, landscape designing and horticulture among unemployed youth, women and public with providing avenues for livelihoods in those areas and improve standards of living of public by fulfilling the national necessities.

TOWARDS BECOMING THE FINEST BOTANIC GARDENS IN THE TROPICS (Guided by the Departmental Corporate Plan 2006-15)

Over the past years the Department of Botanic Gardens has been guided by its corporate plan.

In formulating the plan, the Department considered four strategic themes – Research, Development, Education and Training (including extension and outreach education courses), and *a cross-cutting theme* of Managing the Operation effectively. There are three key elements the Botanic Gardens seeking to achieve:

- Updating and improving knowledge of plant diversity, biodiversity and conservation through scientific research of the highest quality.
- Effective outcomes for Sri Lanka – practical applications that will capitalise on our unique capital and intellectual assets, project development, direct involvement, capacity

building and contributions of data, practical experience and education to in situ and ex situ programmes; floriculture; ecotourism etc;

- Heightened public awareness and appreciation of the Botanic Gardens, and the importance of its work – focusing on the conservation and sustainable use of plant resources, up scaling educational programmes and including greatly enhanced public access to our important collections and improved visitor facilities.

This report sets out achievements of year 2013 measured against the main strategic themes of the Corporate Plan.



RESEARCH

We aspire to

- Updating and improving knowledge of plant diversity, biodiversity and conservation through scientific research of the highest quality and developing floriculture industry within the country through the relevant research addressing the following current and future issues:

Floriculture Research and development

- Floriculture Research Programme
- Introduction of new ornamental plants
- Plant production
- Island wide floriculture extension programme

Plant bio diversity Research

- Exploration and documentation of plant resources of Sri Lanka
- Management of the National Herbarium
- Understanding and management of bio diversity



Some Anthurium and Orchid hybrids at Gardens

5.1.1.1. Floriculture Research Programme

Floriculture research programme focuses to address the current and future needs of the industry. It focuses on research areas as exploration and introduction of new varieties using potential wild species; agronomy and mass propagation of the newly discovered plants, conventional and mutation breeding, aquatic plants with floriculture potential, high value flowers, and natural products from native plants and entophytic fungi.

Several Research programmes were carried out under micro-propagation, agronomy, post harvesting techniques, pest and disease management and plant breeding areas to address current issues on floriculture sector by Floriculture Research and Development unit.

a. Micropropagation /Tissue Culture

- A research was carried out to find out effect of media additives on micropagation of Gerbera (*Gerbera jamesonii* var. Kilmanjaro).



Lagenandra ovata



Lagenandra lancifolia

- An *in-vitro* micro-propagation method was developed for *Lagenandra lancifolia* and *Lagenandra ovata*. Surface sterilization of *Lagenandra ovata* revealed that explants treated with combination of 0.2% mercuric chloride and 25% sodium hypochlorite, showed the highest aseptic culture establishment. Early response for sprouting and better culture establishment of rhizome segments were observed on Murashige and Skoog (MS medium) medium with 5 mg l⁻¹ BAP

b. Agronomy

- Results obtained from the trial conducted for the evaluation fertilizers of Anthuriums have indicated that the best fertilizer mixture for vegetative growth was N: P: K 30:10:10 combined with N: P: K - 20:20:20 in solid or crystal form and an organic fertilizer applied in liquid form.

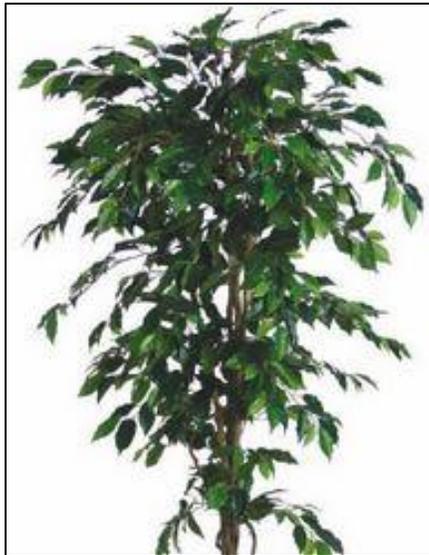
Besides external application of 375 ppm GA₃ combination with 250 ppm BAP was most suitable to enhance lateral shoot induction with increased shoot length, length of leaves and number of roots in 06 month old topped *Anthurium andreaeanum* plants (i.e. after the apical portion of the plant was removed and planted separately), *Tropical red* and *Safari* varieties.

- A trial initiated as a student project to find the best medium and maturity of stem cuttings of *Ficus nitida* has been completed. Sand only was the best medium for rooting and soft wood cutting were the best stage of maturity of stems for efficient rooting.

- Research trials on the best rooting medium and maturity of stem cuttings for successful rooting of bougainvillea stem cuttings revealed that semi mature cuttings were the best while a medium with sand and coir dust mixed at a ratio of 1:1 was most appropriate for efficient rooting. The effect of fertilizers in inducing early flowers was also investigated.



Anthurium



Ficus nitida



Bougainvillea

Several other Research programmes carried out on Agronomy are listed as follows;

- Effect of gibberellic acid on growth and flowering of *Henckelia humboldtianus* Gardner (Ceylon Rock Primrose) Scientia Horticulturae.
- Effect of two plant growth hormones and potting media on an ornamental foliage plant *Ophiopogon* sp.
- Identification of nutrient imbalance to overcome tip burn in *Dracaena sanderiana* L.
- Investigation of a suitable method to produce “Spiral Lucky Bamboo” using *Dracaena sanderiana* Var. “Gold” by manipulating physical applications.
- Investigation of the effect of gibberellic acid concentration and media composition on increasing the leaf length of Chinese grass (leaf length of Chinese grass L.).

c. Post Harvest Handling of Cut Flowers and Cut Leaves

Research programmes carried out on post harvest handling are as follows,

- Development of Rapid Propagation Methods and a Miniature Plant for Export-oriented Foliage, *Zamioculcas zamifolia*,



Zamioculcas zamifolia

- Effect of some selected wash solutions and packaging materials on improving the shelf life of *Cordyline fruticosa* Var. ‘Green Ti’ cut foliage,
- Selection of the best drying methods and suitable drying periods for Hibiscus, Zinnia, Wild Sun Flower and Gerbera flowers.
- A study was carried out using various chemicals for extending the vase life of a *Calathea* sp and had shown that 50 mg/l citric acid alone to be the best dipping solution.



Cordyline fruticosa Var.
‘Green Ti’ cut foliage

d. Pest and Disease Management

Following research programmes were conducted on pest and disease management;

- Research was carried out on Integrated Pest Management of *Gerbera jamesonii* cultivars under plant house conditions in Gampaha.
- It was found a new Occasional Pest Symphytan (Arthropoda: Myriopoda: Symphyla) in Orchid cultivations in Meerigama Sri Lanka under a research programme conducted.
- A severe disease condition affecting Orchid flowers of the genus *Dendrobium* at Gampaha garden was studied as part of a student project in collaboration with the Sabaragamuwa University. The causal agent of the disease was identified as the fungus *Fusarium proliferatum*. This is the first report of the disease affecting Orchid flowers in this country although it is widely reported as affecting *Dendrobiums* and other genera in Hawaii. Preventive measures have been taken to avoid spread of the disease and treatment of plants is still in progress at the nursery.

5.1.1.2. Introduction of new ornamental plants

Introduction of new taxa at species, cultivar or mutant level into floriculture industry is continued during this year as well. Several Plant breeding programmes were carried out especially for native plants, Orchids and Anthuriums in order to produce new crop varieties or lines with desirable properties such as colour, yield, quality, tolerance, etc.

General maintenance activities were carried out for all native plants in the collection including vegetative propagated plants and seedlings from various crosses. Plant propagation was carried out as follows: 50 *Chirita* plants and 60 plants of *Impatiance* sp. through cuttings, 100 plants of *Osbeckia octandra* through cuttings, 50 *Chirita moonii* through seeds and 25 *Exacum* sp. through seeds. 20 Orchid seed pods were germinated in the laboratory.

Two new hybrids of Anthurium and *Cattleya orchid* were named as ‘Anthurium HRH Princess Maha Chakri Sirindhorn and ‘Cattleya HIH Princess Tsuguko respectively to commemorate the arrival of Royal Princesses of Thailand and Japan at the Royal Botanic Gardens. 8 hybrids of Orchids and Anthuriums are being processed at various stages in the laboratory and in the field.



Chirita moonii



Osbeckia octandra

5.1.1.3. Plant production

a. Plant production at Floriculture unit, Peradeniya

Plant production programme was carried out as planned to provide high quality indoor plants, Anthurium, Orchid and Gerbera plants as a result of mass propagation activities, to sale and to use in gardening/landscaping purposes at gardens. Value addition activities for local plant sales at the botanic gardens were also carried out during this year.

	Crop	No. of Plants
1.	Orchids (seed culture and mericlones)	30,940
2.	Anthurium Seedlings	4,590
3.	Anthurium Tissue cultured plants	1,748
4	Foliage plants	37,926
	Total plant production	75,204

From this total of plants produced over 60% of the plants were sold to the public or released on issue orders for different government institutions. The remainder was reserved for use as mother plants to establish new

plantations, for production of exhibit plants at the show houses and various exhibitions as well as for replenishment of plant stock in the nurseries.

b. Plant production at Floriculture Unit, Gampaha

Initiation of cultures and subculture was continued for the micropropagation of Anthuriums, Gerbera and Orchids (Dendrobium). General maintenance was carried out for the Orchid, Anthurium, Fern, Gerbera and Water plant collections. 615 community pots and 1528 plants in 2” pots were produced by Orchid seeds and tissue culture practices and 7740 *in-vitro* propagated Anthurium plants were also acclimatized.

c. Plant production at Floriculture Unit at Dry Zone Botanic Gardens, Mirijiwela

Planting and maintenance were continued in net houses constructed for the cultivation of Anthuriums, Orchids and Foliage plants. 400 Anthuriums, 50 Orchids, 65 cacti, 600 Coleus, 05 Tilandsia, 3800 Foliage, Bougainvillea and other ornamental plants were propagated while 10 endemic orchids, 10 *Vanda tesellata*, 38 Tilandsia varieties, 07 Palms, 20 aquatic plants, 73 Crotons 65 new cactus varieties and 43 new foliage plants were introduced to the present collection. Orchids, Anthuriums, Tilandsia, Cactus, Palms, Aquatic plants, Bougainvillea, Foliage and other ornamental plants were re-potted as well.

d. Plants & Flowers Released/ Sold at gardens

Floriculture Unit	Crop	Categories	No. plants released on Issue orders	No. of plants/ flowers Sold
Royal Botanic Gardens Peradeniya	Foliage plants	Pots and poly bags	614	20,743
	Orchid	Community pots (no. of plants)	440	5,020
		2” pots	-	4,314
	Anthuriums	Plants	-	2,923
		Mericlones plants	-	1,452
		Flowers	289	2,411
	Gerberas	Adult Plants	-	35
		Flowers		1,073
Gampaha Botanic Gardens,	Orchid	Community pots (no. of plants)	-	2640
		2” pots	-	456
	Anthurium	Plants	-	1435
	Total plants /flowers		1,054 plants 289 flowers	39,018 plants 3,484 flowers

5.1.1.4. Island wide national floriculture extension programme ('Suwasas Mal')

The Suwasas Mal program was initiated in 2005 to organize floriculture crop growers into farmer organizations / associations, provide training as well as marketing facilitation and thereby assist them to increase their capacity of income generation.

Under this program 139 grower organizations have been registered and were provided with material for infrastructure development as well as high quality imported mother plants for their cultivations. They were also provided with technical knowhow through routine visits to their nurseries as well as conducting workshops and seminars on selected topics.

Income generation of growers attached to farmer organizations was complimented by organizing large district level as well as small localized exhibitions and plant sales in selected districts.

a. Increasing farmer communities on floriculture

During this year 39 new farmer societies/organizations were formed gathering potential growers involved in the floriculture sector in various parts of the island. Numbers of societies registered at each district during this year under the "Suwasas Mal" programme are as follows:

District	Number of Societies	District	Number of Societies
Kandy	11	Colombo	09
Nuwara Eliya	13	Gampaha	28
Matale	08	Anuradhapura	01
Badulla	08	Ratnapura	10
Hambantota	07	Kegalle	16
Matara	02	Puttlum	06
Galle	02	Kurunegala	06
Kaluthara	12	Total	139

Under these societies 2,780 growers are facilitated technically and financially for enhancing their operational capacity in floriculture sector.

b. Empowering organized growers

Lower and middle level growers who are already involved in the sector were empowered by conducting trainings and workshops to provide technically know how, providing on site advices to address problem in the field, providing assistance in form of materials, equipment and infrastructure development for better performing in the sector, and making available publication on floriculture related information for growers education.

Workshops

Workshops conducted in different districts during this year are as follows;

District	No. of Workshops	No. of Participants
Kandy	01	90
Nuware Eliya	01	13
Kegalle	14	618
Puttlum	02	124
Gampaha	04	365
Matale	02	115
Hambantota	01	100
Total	25	1,425

Nurseries visited

Number of nurseries visited during this year to provide onsite advices for growers are as follows;

District	No. of Nurseries visited
Kandy	38
Nuware Eliya	63
Kegalle	280
Gampaha	475
Hambantota	49
Matale	32
Kurunegala	55
Total	992

In addition to that onsite advices were provided for growers, regular monthly meetings were conducted to address the growers' issues on their cultivation and other related issues. During this year 576 monthly meetings were conducted in Kandy, Matale, Gampaha, Kegalle, Kaluthara, Nuwara Eliya, Hambantota, Kurunegala, Colombo and Matara districts.

Other than the above mentioned nursery visits 34 Anturium nurseries (at Walpita, Maradaghamulla, Ganemulla, Henegama, Minuwangoda) were visited



Conducting short term training sessions for growers



Conducting a workshop on Bonsai cultivation for growers



A Nursery maintained by a grower with advice

and submitted a report on the status of Anhtuirum cultivations to the “Liya Abiman” programme. Members of “Suwahas Mal” societies in various districts [i.e. Kegalle (06), Colombo (01), Matale (01) and Hambantota (04)] were taken on a total of 12 field visits to visit other nurseries and plant exhibitions to purchase new planting material and improve their cultivations.

Trainings on floriculture

Short term training programmes were conducted on cultivation of Anthuriums, Orchids, and Gerbera & Cut greens for growers involved in floriculture to disseminate relevant up to date knowledge of cultivation issues during this year as well.

Details of short term training sessions on cultivation of floriculture crops, tissue culture and value added products by Floriculture Research and Development Unit, Peradeniya are as follows;

Subject	Duration	Number of Classes	No. of Participants
Orchid Cultivation	01 day	46	1,590
	Practical training	30	462
	Out station	07	582
Foliage plants	01 day	39	1,240
	Practical training	37	437
	Out station	06	345
Anthuriums	01 day	54	2,182
	Practical training	19	120
	Out station	10	781
Gerbera cultivation	01 day	16	386
	Out station	01	35
Tissue culture	05 days	09	63
Post Harvest	01 day – Out station	01	35
Bonsai	01 day	03	120
	Out station	03	125
Value added products	01 day	03	75
	Out station	02	105
Total		286	8,683

Other than the above training programmes, following training programmes were also conducted by the floriculture unit at Peradeniya.

- Classes in Tamil medium were conducted for 64 students on Orchids, Anthuriums, Roses, nursery management and Foliage plants.
- Lectures on flower arrangements, post harvest handling of floriculture products as well as pest and disease management were conducted by the Departmental staff for students following the three month training programme at the Royal Botanic Gardens, Peradeniya.

- Two training programmes each on Flower arrangement and Terrarium as well as dry flower production and dry flower craft were conducted for 100 school teachers of the central province participating in each workshop.
- A training session on the cultivation of Anthuriums was conducted for about 30 Directors and Deputy Directors of the Provincial Ministry of Education.
- A session on cultivation of *Dracaena sandariana* was also conducted for 35 participants at the Wagolla DTC. While another workshop on the cultivation of *Dracaena sandariana* was conducted in Kegalle for 50 participants who are recipients of “Samurdhi” benefits.
- A training session on cut foliage was also conducted at Matale for 60 participants, organized by the Central Bank Provincial Office.
- Training programmes on the cultivation of Foliage plants, *Dracaena sandariana* and Gerbera were conducted for 80, 60 & 45 officer of the Department of Agriculture respectively at the Bombuwela In-service Training Institute.
- Practical demonstrations and introductory lectures on pollination biology and breeding were conducted for 38 students from the Department of Botany, University of Peradeniya. Lecture demonstrations on tissue culture were conducted for 12 students and 29 teachers.
- Practical demonstration and introductory lectures on floriculture crop cultivations were also conducted for 44 students from the Faculty of allied health sciences, University of Peradeniya as well as School of Agriculture, Kundasale.
- 40 students from the Moratuwa University following the degree programme on landscape architecture were provided with a lecture demonstration on foliage plants. 44 students were also provided with a lecture demonstration on tissue culture.
- An introduction to the cultivation of ornamental plants was provided to 25 individuals in Hatton as part of a lively hood development programme in the area for income generation as well as an assistance provided by this department. An introduction was also provided on investing in the floriculture industry to 80 participants at the Divisional Secretariat Auditorium in Walapane..
- An another introductory programme on cultivation of Anthuriums and ornamental plants was provided to 50 individuals in Kothmale as part of a lively hood development programme initiated by the Ministry of Economic Development in the area for income generation as well.
- A work shop on “Bonsai” culture was held at the Auditorium of the Education Centre at the RBG, Peradeniya for 175 participants of “Suwahas Mal” organizations from Gampaha, Kegalle, Matale, Kandy and Bandarawela. The workshop was conducted in collaboration with the University of Peradeniya with the participation of resource persons from China.

Short term trainings conducted at Hakgala Botanic Gardens are listed as below;

Title of the programme	Participants
Gerbera and rose cultivation	12 from Diyathalawa Army camp
Rose cultivation	5 A / L students and 01 individual
	22 Flower growers in Nadungamuwa
	20 diploma students from Galpalama Agriculture training centre
	52 AI Diploma students from pelwehra Agriculture school
	15 students from NITA
Roses, Chrysanthemum and Gerbera cultivation	21 Growers
	1 Grower
	39 villages in the area
	72 farmers under the Divi Naguma Programme
	97 flower growers from Nuwara Eliya District Secretariat
Chrysanthemum cultivation	13 Growers under Suwasas Mal societies
Cut green cultivation	1A/L student from Kemananda Vidyalaya
Carnation cultivation	2 Growers
Gerbera cultivation	11 Growers
Plant nursery and plant production	92 farmers under the Divi Naguma Programme, Welimada Divisional Secretariat
Gerbera, Anthurium	55 farmers under the Divi Naguma Programme Welimada Divisional Secretariat

In addition to that there were training programmes conducted at Gampha Botanic Gardens. These are as follows,

- Training programmes on the cultivation of Orchids, Anthuriums, Foliage plants and Gerberas were conducted for 498, 418, 267, & 86 participants
- Training on foliage plants and *Dracaena sanderiana* was conducted for 122 participants under the “Divinaguma” Programme while a programme on Orchid cultivation was conducted for 84 Samurdhi beneficiaries.
- A programme on cultivation of various floriculture crops was conducted for 25 trainees from the “Lalith Athulathmudali” Youth Training Center.
- A training programme on the potential of cultivating floriculture crops on a commercial basis in Anuradhapura district was conducted for 250 growers in Anuradhapura.
- A programme on cultivating anthuriums was also conducted at the AGA office Meergama for 250 participants.

- A training programme on the cultivation of Orchids and *Dracaena sanderiana* was conducted for 20 participants at Galle for the Export Development Board.
- A training programme on the potential of cultivating Orchids, Anthuriums and foliage plants was conducted at the Allawwa Divisional Secretariat Auditorium for 200, 71 & 50 participants respectively under human resource development programmes conducted for the upcoming “Dayata Kirula” exhibition.

Training programmes conducted at Dry Zone Botanic Gardens, Mirijjawila are mentioned below;

- Training programmes on the cultivation of Orchids, Anthurium, Ornamental plants and Nursery management were conducted for 430, 70, 80 & 140 participants respectively.
- Training on growing floriculture crops on a commercial basis as well as practical training programmes were also conducted for 453 participants.
- One training programme each on the cultivation of Orchids, Anthurium & Foliage plants was conducted for 40 officers of the DOA.
- Other than the above mentioned capacity building programmes for growers, a fruitful discussion was conducted on 18th of July at the Auditorium of the Education Center, RBG, Peradeniya on upgrading of existing activities undertaken under the “Suwahas Mal” programme as well as future plans of the programme with the active participation of growers and other related parties. Over 150 participants including representatives from 128 “Suwahas Mal” Societies Island wide as well as officers involved in extension activities were participated in the programme. The programme was conducted by in collaboration with Unipower Pvt. Ltd as a private public partnership programme.

c. Provision of materials, equipment and infrastructure facilities

Distribution of high quality mother plants

Mother plant stocks were imported under the Suwahas Mal program for distribution among members belonging to different grower organization. This was part of the program to improve quality of products for higher profit margins and thereby increase earnings of the growers. Plants were imported at a total cost of Rs. 5.7 Mn.

12,000 Gerberas and 10,000 Carnations were imported from India and distributed among grower organizations at Nuwera Eliya and Badulla districts. 33,400 Orchids (i.e. an assortment of Dendrobiums, Vanda, Phalenopsis and Cattleya) were imported from Thailand and distributed at cost price to members of “Suwahas Mal” societies situated island wide who had placed prior orders as well as to enrich germplasm collection at the Botanic Gardens in Peradeniya, Gampaha, Avissawella and Hambantota as facilitation to improve their quality of the plant collection.

Distribution of shade netting

As part of an incentive for infrastructure development, distribution of 50% and 70% shade netting among members of “Suwasas Mal” associations was continued this year as well. A total of 25,341 m² shade netting (i.e. 11,700 m² 50% shade & 13,641m² 70% shade) were distributed to members of 32 “Suwasas Mal” societies in the Colombo, Ratnapura, Anuradhapura, Matale, Galle, Matara, Kurunegala, Kegalle, Kandy and Kaluthara districts.



Distributing shade nets among floriculture growers

Evaluation of cut foliage promotion programme - 2011

Evaluation of cultivation established under the programme carried out for promoting cultivation of cut foliage initiated two years ago continued this year as well. A total of 94 nurseries were visited at Gampaha (80) and Kegalle (14) this year and material that was underutilized was collected from recipients of material assistance from this department in 2011 & 2012. Material was redistributed to 19 members of the Maradaghamula “Suwasas Mal” society already involved in the cultivation of cut foliage.



2 nurseries established in Kegalle district with the facilitation provided under the programme

d. Marketing assistance

Small scale exhibitions and district level large exhibitions were also conducted to enhance the marketing capabilities of growers in floriculture as part of our intervention in marketing products of growers, exhibitions and plant sales are routinely organized at district level and in local areas year round. Details of exhibitions conducted are as follows;

	District	No. of Large district level Exhibitions	No. of small local area Exhibitions
1.	Kandy	01	10
2.	Kurunegala	01	03
3.	Kegalle	02	44
4.	Puttlum	01	-
5.	Gampaha	-	38
6.	Kaluthara	03	-
7.	Matale	02	-
8.	Anuradhapura	-	02
9.	Hambantota	02	08
10.	Ratnapura	-	02
11.	Colombo	-	02
12.	Badulla	-	01
	Total	12	110

Members attached to the Palapathwala and Ukuwela “Suwas Mal” societies in the Matale district were able to established two permanent sales outlets by the assistance given by the department and with this 17 and 20 members respectively of these societies will be beneficiaries under this programme through marketing of their products.



Flower exhibitions conducted

5.1.2. Plant Bio Diversity Research

5.1.2.1. Exploration and documentation of plant resources of Sri Lanka

Several plant exploration programmes were carried out to collect species requiring ex-situ conservation practices, to address bio diversity conservation measures, to identify utilization of economically potential species sustainably, to assess and restore species habitats and provide for their reintroduction. Documentation of plant resources was also carried out as a part of the survey.

a. Botanical survey

A Botanical Survey was continued this year as well by the National Herbarium (NH) in collaboration with the other units for exploration and collection of plant species, mainly of threatened plants in dry and wet zones as a the main plant exploration programme of the department. This leads to implement biodiversity conservation measures and ex-situ conservation practices and to identify potential economically sustainable species in different industries.

While conducting the botanical survey, 30 field excursions were conducted and 948 flowering plants , 14 ferns and 240 mosses specimens were collected. Identification of plants is being carried out and 05 critically endangered, 29 endangered, 50 vulnerable and 35 near threatened flowering plant species were



Conducting a field visit to Tangamale Sanctuary in Haputale



Sonerila pumila ; Endangered species found in Seetha Eliya Forest Reserve, Nuwara Eliya

identified. Ex-situ conservation measures were also taken when necessary. The survey will be continued in next year as well.

field explorations conducted under the survey and specimens collected are shown in the table;

Destination	Number of Specimens Collected		
	Angiosperms	Ferns	Mosses
Hantana (2 field excursions)	32		
Bobella-Nawula (2 field excursions)	105		
Corbet's gap at Knuckles conservation area	17		
Tangamale Sanctuary	31		
Hakgala & seeetha eliya forest reserve	20		
Tangappuwa (3 field excursions)	67		45
Dolosbage-Winsor forest area	20	1	15
Watakelle-Kelabokka	28		30
Reverston (2 field excursions)	22		
Wiltshire Forest- Matale	7		
Dolosbage-Rahalagala	14		
Hunnasgiriya-Hunnas falls	10		15
Kanneliya & Hiniduma	39		
Kikiliyamana	33	2	30
Bulath kohupitiya -Yatiantota	24		10
Sinharaja Forest	55		
Morapitiya , Kalutara	33		
Seven Virgins hills (2 field excursions)	79	1	30
Dotulgala	62		65
Ududumbara	30		
Mirijjawila Dry zone Botanic Gardens - Hambantota	22		
Horton Plains	21		
Kaluganga Development Project area (2 field excursions of 4 days)	177	10	
Total	948	14	240

b. Other plant exploration activities

Plants identification programme were continued by the NH for collected plants from explorations conducted in Moragahakanda hydro power generating project area in year 2012. 169 plants were collected for assessment and 52 specimens were identified. Three endangered (EN), 5 Vulnerable (VU), and 12 Near Threatened (NT) plant species were recorded.

Wild flowers and way side trees were photographed by National Herbarium while doing field excursions. Identification of the specimens was carried out for compilation of books on "Wild flowers of Sri Lanka" and "Common Wayside Trees of Sri Lanka".

Five day duration field excursion was conducted in Moragahakanda by Mirijjawila Dry Botanic Gardens, Hambantota this year and collected 890 specimens of 80 species. Identification of plant specimens is in

progress and ex situ conservation measures were taken as propagating them in the nursery to add in the arboretum later.

Five one day field excursions and three two day field excursions were conducted by NH in Namunukula(1), Piduruthalagala peak areas (3) , Mandaram Nuwara -dry phase of Piduruthalagala- (2) and Lookkandura at Piduruthalagala range (2) under the “Exploration study of Hill top Flora in Sri Lanka” and collected 225 flowering plants, 2 ferns and 140 Mosses specimens. Identification of specimens is being carried out and 27 flowering plants 50 mosses specimens were identified.



Bryum argenteum Hedw. (Bryaceae)



Hypopterygium flavolimbatum Muell.Hal.
(Hypopterygiaceae)

Some Beautiful moss flora collected during the field visits for studies



Christisonia tricolor; Endangered sp. found in Reverston area



Critically endangered species: *Exacum pedunculatum* L. in Bobella-Nawula area

Two field explorations were conducted by NH in Hantana area to collect propagation materials of *Calamus* (Wewel). Seed germination test is being carried out under the study of Seed Germination, storage and propagation of Rattan (*Calamus* sp.: Areaceae) in Sri Lanka.

Two field explorations for collection of plants and four field visits to investigate of the site were carried out by NH to submit an Environmental Impact Assessment report to the Central Environment Authority for a very important unique site which is the habitat of a critically endangered species *Exacum pedunculatum* L in Nawula-Bobella area.

6 field explorations were conducted by the Royal Botanic Gardens in Dotulugala (1), Ududumbara(1), Kaluganga(2), Lookkadura(1), Hakgala(1) and 121 plant species were collected and identification of species is being carried out. While doing the identification 11 vulnerable (VU), 7 near threatened (NT), 3 endangered (EN) species were identified and ex situ conservation measures were taken for conserving the species at the garden.

3 field explorations were conducted by Hakgala Botanic Gardens in Boburu Alla forest reserve, Thangamale wild life reservation and Seethaeliya forest reserve. Hundred and twenty four (124) plant specimens were collected while doing field excursions and identification of the specimens are being carried out. 40 specimens were identified as herbarium specimens and will be added to the herbarium of the garden as well as to the collection of National Herbarium.

A field excursion was conducted by Gampaha Botanic Gardens for Hamilton ela development programme to assess effects for plant community in the area and give technical advices for remedial and conservation measures. Other than that there were 4 field explorations were also conducted by Gampaha Botanic Gardens in Wanamandawa medicinal plant garden, Ambepussa, Kithulgala and Horagolla Forest Reserves and collected 8 impotent flowering plant species.

In addition to that 88 herbarium specimens were added to herbarium at Gampaha Botanic Gardens to enrich the collection.

5.1.2.2. Management of the National Herbarium

Nationally important research activities on plant taxonomy and systematic were undertaken by the National Herbarium to assist the management and facilitate understanding of biodiversity of Sri Lanka while enriching the herbarium collection by identification, verification and addition of new specimens. Management of the existing species collection was also carried out with care for future references.

a. Enrichment of herbaria

Specimens collected from field explorations were identified; verified; specimens/slides were prepared and added/deposited to enrich the National Herbarium collection for future reference applied with standard

herbarium techniques. Enrichment of the National Herbarium collection and branch herbaria during this year is listed below in the table.

Type of collection	Source	Verified and added	Herbarium
<i>Angiosperms</i>	Adam's peak forest reserve, path from Sripada to Fishing huts -2011	4	National Herbarium
	Weudakanda forest reserve Kurunegala- 2010	1	National Herbarium
	Royal Botanic Gardens 2012	29	National Herbarium
	Ruhuna National Park, Katagamuwa Sanctuary	17	National Herbarium
	Ruhuna National Park, Wedasitikanda	5	National Herbarium
	Ruhuna National Park, Near Sellakataragama	8	National Herbarium
	Ruhuna National Park, Sithul Pahuwa Area	8	National Herbarium
	Dotalugala Forest	1	National Herbarium
	Bobella, near Naula	2	National Herbarium
	In paddy field, Urulawatta, Pilimathalawa	1	National Herbarium
	Dolukanda, Kurunegala	1	National Herbarium
	Royal Botanic Gardens, Peradeniya	29	Herbarium-Royal Botanic Gardens, Peradeniya
	Moragahakande-Elehera	33	National Herbarium
	Pidurutalagala	16	National Herbarium
	Authenticated voucher specimens submitted by various institutes and Universities.	116	National Herbarium
Mosses	Hunnasgiriya -Hunnasfalls	10	National Herbarium
	Watakelle-Kelabokka	25	National Herbarium
	Namunukula	15	National Herbarium
	Pidurutalagala	20	National Herbarium
	Tangappuwa	25	National Herbarium
	Pidurutalagala-Mandaram Nuwara	10	National Herbarium
	Seven Virgin Hills	20	National Herbarium
	Dolosbage- winsor forest	8	National Herbarium
	Hantana	12	National Herbarium
Lookandura	30	National Herbarium	
Total		444	

Accessioning and herbarium data formulation activities were continued during this year as well. Digitized and edited 375 illustrations of H. D. Alwis's collection and compiled data to a database of the digital herbarium collection.

Establishing a bar code system for national herbarium specimen collection is initiated to provide a fast and efficient way of locating specimens in the database as well as clarity when referring to individual items. a bar code printer, a bar code scanner, a bar code reader, and bar code labels were purchased in order to initiate the bar code system.

b. Management of existing collection

Regular activities were continued at the herbarium for care and maintenance of herbarium specimens and other ancillary collection (Plant Specimens, Library collection and other ancillary collections).

General maintenance activities are listed below in the table.

	Activity	No. of Specimens
1.	Herbarium specimens repaired	9,725
2.	Specimens treated for insect damage (poisoning)	80
3.	Deep freezing specimens	19,665
4.	Specimens mounted	311
5.	Specimens remounted	3
6.	Species covers added	762
7.	Genus covers added	539
8.	Specimens cleaned	22,071
9.	Books cleaned	752
10.	Specimens pressed	1,869
11.	Labels typed for genus covers, specimens and genus cards	3089

5.1.2.3. Understanding and management of bio diversity

Conservation activities, sustainable utilization and development of biodiversity in natural and man-made environments were considered as an important national task of the gardens. Mainly NH with other units carried out some research programmes and educational programmes on bio diversity to develop bio diversity in the country.

a. Collaborative Research and Projects

Several research programmes were continued by the National Herbarium on “bioassay guided fractionation and Isolation of bioactive natural compounds from Bryophytes”, “Taxonomy and cytology of selected species of Sri Lankan Gesneriaceae” and “Grassland diversity & exploration for threatened flora of Hantana Mountain Range” in collaboration with the University of Colombo during this year.

Preliminary survey on “Exploration on moss flora along an altitudinal gradient at selected areas in Central Province, Sri Lanka” was carried out with the financial support from Trust Fund, Department of National Botanic Gardens and Biodiversity Secretariat, Ministry of Environment and Renewable Energy.

A project on the survey of bee pollinators is also being carried out with financial support from the National Research council (NRC) in collaboration with University of Ruhuna. Another project on Chromosomes of Sri Lanka Plants is also carried out with a NRC grant in collaboration with the University of Peradeniya.



Digitizing Herbarium Specimens

At the RBG, Peradeniya, phenological information were collected on 15 native trees, 12 endemic trees and 28 exotic trees to study periodic life cycle events and how these are influenced by seasonal and inter-annual variations in climate, as well as habitat factors and photographs were also taken as a record to prepare the electronic database on living collection of the garden.

Project on see weeds are being carried out in collaboration with University of Colombo and 115 voucher specimens of green, red and brown algae were deposited at the National herbarium for future reference.



Trees planted in the arboretum at Mirrijjawila Dry Zone Botanic Gardens

Discussions were held to initiate a project on Bamboo conservation at Illukowita Wet Zone Botanic Gardens, Avissawella with officials of United Nations Environment Programme (UNEP).

b. Botanical activities

The existing ex-situ collections of endemic, native and even some exotic plants in Royal Botanic Gardens, Peradeniya, Hakgala Botanic Gardens, Gampaha Botanic Gardens and Ganewatta Medicinal Plant Garden were maintained at high standards and ex-situ conservational activities of dry and wet zone plants were carried out in newly established botanic gardens i.e. Dry zone Botanic gardens at Mirrijjawila Hambantota and Wet Zone Botanic Gardens at Illukowita, Avissawella.

Germplasm collections including seed banks, field genebanks, and tissue collections in culture were maintained at gardens with adding new species to plant collections. Development of field genebanks at new botanic gardens is being continued during this year as well. Collected rare, endangered and vulnerable plants while carrying out field excursion were propagated at the gardens.

c. Educational programmes

Training and educational programmes, lectures on plant exploration, identification, nomenclature, herbarium management, plant morphology and biodiversity conservation were conducted for different sectors of the public to enhance knowledge on plant and bio diversity conservation for better understanding and management of bio diversity as well as sharpening their skills in identifying trees and plants towards conservation and for other scientific activities.

Conducted educational programmes at gardens are listed below in the table;

Title of the programme	Participants	Institute/Programme	Conducted by
Lecture on role of Herbarium in plant identification, biodiversity conservation & management of the herbarium, Herbarium techniques, including virtual tour.	30 students	St/Mary's College, Kegalle	National Herbarium
	10 students	Lyceum International College, Gampaha	-Do-
	120 students	Theldeniya National College	-Do-
	35 students	University of Rajarata	-Do-
	29 students	Department of Geography, University of Colombo	-Do-
	45 students	University of Jaffna	-Do-
	08 students	University of Kelaniya	-Do-
	200 students	Open University Nawala & Polgolla branch	-Do-
	70 students	University of Sri Jayawardenapura	-Do-
	15 students	University of Peradeniya	-Do-
	27 students	Faculty of Allied health Sciences, University of Peradeniya	-Do-
	25 wild life trainee officers	National Wildlife Training Centre-Giritale	-Do-
Lecture on identification of medicinal plants and management of the herbarium, Herbarium techniques, including virtual tour.	80 Ayurvedic Doctors	Department of Ayuruweda, Central Province	-Do-
Garden walkabout and Introduction of Botanic Gardens	130 students as Environmental Monitoring Guides Under Central Environmental Authority	Teldeniya Vidyalaya , Matale	Royal botanic Gardens
	215 students	St. Joseph's Balika College Kegalle	-Do-
	40 students	Gannoruwa Royal College and Sawaranamali Balika Vidyalaya	-Do-

Title of the programme	Participants	Institute/Programme	Conducted by
	30 students	Murutalawa Palawa Navodya Vidyalaya	-Do-
	30 students	Nildandahinna Vidyalaya Kotmale	-Do-
	60 students	St.Annes Balika College Colombo	-Do-
	29 Science Teacher Trainees	Siyanaa Teacher Training College	-Do-
Presentation of introduction of the Botanical Garden followed by a field visit	400 university selected children	Leadership Training Programme	-Do-
Facilitated field trip in the Botanic Garden with awareness	50 Ayurvedic doctors	East, Western and Central Province	-Do-
	38 Scouts	Kilinocchi District	-Do-
Tree conservation programme	10 Trainees	Wild Life Conservation Department	-Do-
Lecture on Role of Herbarium in biodiversity conservation including virtual tour	52 school students, as the part of workshop conducted by RBG on Biodiversity day	Ranabima Royal College & Swarnamali Girls's College, Kandy	National Herbarium
Lecture on Role of Herbarium in biodiversity conservation and taxonomy of plants including virtual tour	27 students	Faculty of Allied Health Sciences, University of Peradeniya	-Do-
5 day programme of providing herbarium accession to local Scientists	2 students	Faculty of Agriculture, University of Peradeniya.	-Do-
Invasive Plants and Endemic plants	36 Principals	Nuwaraeliya Zone	Hakgala Botanic Gardens
Bio diversity and field exploration	30 students	Schools of Nuwaraeliya Zone	-Do-
Plant conservation and Role of a Botanic Garden Flora of Sri Lanka	10 students	Kelaniya Universtiy	-Do-
	40 Students	Visaka Vidyalaya, Bandarawela	-Do-
	79 university selected students	Leadership Training Programme	-Do-
Bio diversity conservation	50 students	School children in the Gampaha area	Gampaha Botanic Gardens
	45 students and 05 teachers	Schools from Education division , Minuwangoda	-Do-

Title of the programme	Participants	Institute/Programme	Conducted by
	35 members of Ecology society	Gothami Balika vidyalaya, Colombo	-Do-
	38 trainees	Wild Life Conservation training programme	Royal botanic Gardens
	15 undergraduate	University of Colombo	Wet Zone Botanic Gardens, Avissawella
Lecture on management of the herbarium, and herbarium techniques.	25 A/L students	Uduwerella Vidyalaya, Gampaha	National Herbarium
	40 students	University of Moratuwa	National Herbarium
Lecture on Role of Herbarium in biodiversity conservation, plant nomenclature, management of the herbarium, and herbarium techniques including virtual tour	200 students	Open University Nawala & Polgolla branch	National Herbarium
	70 students	University of Sri Jayawardenapura	National Herbarium
	125 students	Institute of Indigenous Medicine, University of Colombo	National Herbarium
	15 students	University of Peradeniya	National Herbarium



Conducting an educational session on bio diversity for undergraduates of University of Colombo at Wet Zone Botanic Gardens, Avissawella



Educational programme on bio diversity conservation for School children conducted on Bio Diversity Day at RBG, Peradeniya

A 05 day residential workshop on '*Plant Molecular Systematic*' was held at Education and training centre of the Royal Botanic Gardens of Peradeniya from 4-08 of March 2013 with the participation of universities, public and private scientific organizations and interested parties as to promote this field of studies among local research personal and trained them on the field. Laboratory/practical sessions, lecture sessions and

field excursions were included in the workshop for providing thorough technical knowledge to the participant on this field.

The workshop was organized by the National Herbarium in collaboration with the Biodiversity Secretariat of the Ministry of Environment & Renewable Energy in Sri Lanka. The three resource specialists invited to conduct the workshop are Prof. M.W. Chase, F.R.S., Director of the Jodrell Laboratory, Royal Botanic Gardens, Kew, Dr. M.H.J. Barfuss and Prof. Rose Samuel from University of Vienna, Austria.



Practical sessions at 05 day workshop conducted in the Laboratory area of the education center, Royal Botanic Gardens and Department of Molecular Biology, University of Peradeniya



A session conducted by Prof. M.W. Chase at 05 day workshop at the Auditorium of the education centre, Royal Botanic Gardens

DEVELOPMENT

We aspire to

- Heightened public awareness and appreciation of the Botanic Gardens and the importance of its work focusing on the conservation and sustainable use of plant resources including greatly enhanced public access to our important collections and improved visitor facilities.

Objectives

- Improving the quality of botanic gardens
- Establishment of new botanic gardens
- Development of amenity horticulture

6.1 Programmes implemented towards achieving objectives

6.1.1 Improving the quality of botanic gardens

Basic facilities available to the visitors at the Botanic Gardens were upgraded where as necessary and all the botanic gardens were maintained at higher standards to extend quality/reputation of botanic gardens. The enrichment of plant collection of the garden was also undertaken by adding new plants and maintaining plant collection healthily.

a. Improvements to the plant collection

Plant production

Outdoor and indoor plants were produced at the gardens for enhancing the living collection & for developing landscape features of the garden as well as for selling at the sales outlets. The following table shows the number of plants produced at gardens;

Garden	Category	Amount
Royal Botanic Gardens	Outdoor plants	154,610
Hakgala Botanic Gardens	Out door and Indoor plants	82,454
Gampaha Botanic Gardens	Out door and Indoor plants	48,700
Medicinal Plant Gardens	Medicinal plants	19,664
Mirrijawila Dry Zone Botanic Gardens	Medicinal, ornamental, creepers and forest sp.	44,003
Floriculture Research and Development Units at Royal Botanic Gardens and Gampaha Botanic Gardens	Orchids, Anthuriums, Foliage plants, Gerbera	89,392
Total		438,823

Plants added to the arboreta of the gardens

During this year, enrichment of the plant collection of the arboreta of gardens were also carried out adding rare, threatened as well as the native endemic plants to enhance the diversity of the collection. The amount of plants added to the arboreta and its nurseries in 2013 is listed below in the table;

Garden	Amount of plants	
	In the Arboretum	In the Arboretum nursery
Royal Botanic Garden	40	903
Hakgala Botanic Garden	483	1,208
Gampaha Botanic Garden	38	706
Mirijjawila Dry Zone Botanic Gardens, Hambantota	6,559	-
Total	7,120	2,817

The list of some of the endangered and vulnerable plant species which were added to arboreta of gardens in this year are shown in the table below;

Name of the garden	Plant category	Plant sp.	No. of plants	Section of the Arboretum	Conservation status
Royal Botanic Gardens	Endemic	<i>Aporosa cardiosperma</i>	1	D	VU
		<i>Alphonsea hortensis</i>	26	L, Arboretum Nursery	EW
		<i>Eugenia rufo-fulva</i>	21	Arboretum Nursery	VU
		<i>Litsea longifolia</i>	80	Arboretum Nursery	VU
		<i>Trichadenia zeylanica</i>	1	F	VU
		<i>Hopea modesta</i>	1	D	CR
		<i>Shorea trapezifolia</i>	1	D	CR
		<i>Doona ovalifolia</i>	1	C	CR
		<i>Elaeocarpus subvillosus</i>	1	D	VU
		<i>Stemonurus apicalis</i>	1	F	CR
		<i>Shorea stipularis</i>	1	D	CR
	Native	<i>Grewia orientalis</i>	1	Ca	VU
	Exotic	<i>Albizia lebbeck-B</i>	1	B	
		<i>Bertholletia excelsa</i>	1	Aa	VU
<i>Diospyros discolor</i>		60	Arboretum Nursery	VU	
<i>Parmentiera cereifera</i>		275	Arboretum Nursery	EN	
Hakgala Botanic Gardens	Endemic	<i>Cyathea crinita</i>	20	-	EN
		<i>Rhododendron zelanicum</i>	25	Nursery	VU
	Exotic	<i>Pseudotsuga wilsoniana</i>	2	Nursery	VU
		<i>Calocedrus macrolepis kurz Var formosana</i>	-	Under germination	VU
		<i>Chamaecyparis formosensis Matsum</i>	24	Nursery	EN
	<i>Podocarpus nakaii Hay</i>	2	Nursery	EN	

Name of the garden	Plant category	Plant sp.	No. of plants	Section of the Arboretum	Conservation status
Gampaha Botanic Gardens	Endemic	<i>Doona congestifolia</i>	1	F	CR
		<i>Vateria copallifera</i>	02	D,F	EN
	Native	<i>Pterocarpus marsupium</i>	01	A	VU

b. Land improvement activities



Upgraded Fernery area at RBG

Land improvement activities were carried out in order to enhance the quality of the gardens and landscape features at all the gardens during the year.

Fernery area is being upgraded at RBG by adding new species with endemic, rare plants and establishing a new drip irrigation system for better management of the area. New plants and labels were added at the octagon house and pergola area after the rehabilitation.

Planting programme was continued at Ganewatta Medicinal Plant Garden and Aratta (*Alpinia calcarata*), Kothala Himbutu (*Salacia reticulata*) and Pichcha (*Jasminum* sp.) plants were cultivated to enhance the living collection. Creepers collection was also upgraded adding new plant species. Aratta collection was also improved aiming for commercial production.

Rose garden section of the Hakgala Botanic Garden is being expanded to enhance the rose collection. Land improvements activities and upgrading landscape features were carried out to beautify the garden to celebrate the April season. The garden was well maintained to put up its best display with temperate annual flowers, Roses during the April season which is best time to see the garden.



Aratta plants in the field at Genewatta Medicinal Plant Garden

Planting materials such as different kind of plants of Dahlia, Phlox, Salvia, Gazania, Marigold, Anthuriums, Calceolaria, Calendula, aster, cosmos, Petunia, pansy, zinnia, Celosia, flowering cabbage, coleus were purchased for enhancement of landscape features of all the gardens and germ plasm as future use at the gardens.



Expanding the rose garden of Hakgala Botanic Gardens

c. Plant treatments

Plants were treated with care at all the botanic gardens and tree treatments were performed at right time for better management of the trees and taking care of the living collection of the gardens healthily. 93 trees at 3 main botanic gardens were treated for stem cavities, basal stem cavities, removal of decaying & broken branches, fixation of cables and props and removal of dead trees from the felid. Details are as follows;

Plant treatment category	Garden	Trees
Basel cavity treatments	Royal Botanic Gardens, Peradeniya	<i>Diospyros sp.</i> (S-648) <i>Lagerstroemia sp.</i> (Q-343) <i>Lysidice rhodostegia</i> (F/323) Unidentified <i>Saraca asoca</i> (N/136) - Main Border Tree <i>Elaeocarpus sp.</i> (Ea/29) <i>Elaeocarpus sp.</i> (E/82) <i>Cupressus funebris</i> (G/52) <i>Artocarpus heterophyllus</i> (G)
Stem Cavity treatments	Royal Botanic Gardens, Peradeniya	<i>Dipterocarpus alatus</i> (D/132) <i>Nephelium lappaceum</i> (H) <i>Citharexylum Cinereum</i> (E/81) <i>Murraya paniculata</i> (N) -Memorial Tree <i>Holarrhena mitis</i> (S/609) <i>Phyllanthus emblica</i> (L/82) <i>Crescentia cujete</i> (Main border) <i>Parmentiera cereifera</i> (Main border) <i>Zyziphus trinervia</i> (BB/140) <i>Ficus tsjakela</i> (G/103) <i>Tabebuia rosea</i> (D) Memorial Tree <i>Tabebuia guayacan</i> (D) Memorial Tree <i>Cassia nodosa</i> (I)
	Gampaha Botanic Garden	<i>Manilkara zapota</i> (D) <i>Hevea brasiliensis</i> (B) <i>Averrhoa carambola</i> (B) <i>Diospyros malabarica</i> (B) <i>Mangifera indica</i> (C) <i>Hevea brasiliensis</i> (B) <i>Averrhoa carambola</i> (E) <i>Cassia nodosa</i> (D) <i>Manilkara zapota</i> (F) <i>Lodoicea maldivica</i> (D) <i>Anacardium occidentale</i> (D) <i>Adenanthera pavonina</i> (F)

Plant treatment category	Garden	Trees
Removing decaying branches	Royal Botanic Gardens, Peradeniya	<i>Zizyphus sp.</i> (M/1) <i>Chrysophyllum roxburghii</i> (F/207) <i>Chrysophyllum monopryrenum</i> (M/63) <i>Lecythis pohlii</i> (Q/354) <i>Chukrasia tabularis</i> (D/25) <i>Pleurostyliya opposita</i> (Main Border) <i>Pometia eximia</i> (E/197) <i>Filicium decipiens</i> (E/160)
	Hakgala Botanic Garden	<i>04 Cuptessus macrocarpa</i> <i>Cinnamomum camphora</i> <i>Quercus robur</i>
	Gampaha Botanic Garden	<i>Dialium ovidium</i> (D) <i>Pterocarpus marsupium</i> (C) <i>Delonix regia</i> (D) <i>Lafoencia vandeliiana</i> (C) <i>Cinnamomum verum</i> (C) <i>Ficus sp.</i> (C) <i>Enterolobium cyclocarpum</i> (A) <i>Garcinia sp.</i> (A) <i>Hevea brasiliensis</i> (B)
Removal of dead or fallen trees	Royal Botanic Gardens, Peradeniya	<i>Eugenia caryophyllata</i> (E/45) <i>Diopyros embryopteris</i> (N/281) <i>Juniperus bermudiana</i> (R/183) <i>Calyptrocalyx sp.</i> (I/174) <i>Artocarpus heterophyllus</i> (D) <i>Bactris pallidispina</i> (T/598) <i>Antidesma bunius</i> (D/392) <i>Diospyros discolor</i> (L/84) <i>Chrysobalanus icaco</i> (Bb/11) <i>Magnolia sphenocarpa</i> (Aa/148) <i>Copla millenii</i> (D-151) <i>Peltoporum pterocarpum</i> (B) <i>Artocarpus heterophyllus</i> (Ea/9) <i>Terminalia arjuna</i> (Aa/139)-Dead <i>Ficus trimenii</i> (A/8)-Dead
	Gampaha Botanic Garden	<i>Alstonia macrophylla</i> (C) <i>Alstonia macrophylla</i> (D) <i>Mimusops elengi</i> (E) <i>Pterocarpus indicus</i> (E) <i>Pterocarpus marsupium</i> (C) <i>Anacardium occidentale</i> (E) <i>Horsfieldia irya</i> (C) <i>Ficus fergusonii</i> (C) <i>Jacaranda mimisaefolia</i> (A) <i>Artocarpus nobilis</i> (A)

Plant treatment category	Garden	Trees
		<i>Artocarpus heterophyllus</i>
Secured by props/rods and/or cables	Royal Botanic Gardens, Peradeniya	<i>Ficus benjamina</i> (G/96) 8 <i>cycad</i> Trees <i>Pimenta dioica</i> (N/95) <i>Hibiscus</i> sp. (Main Border) <i>Cycas rumphii</i> (Q) <i>Aglaia roxburghiana</i> (O/92)

18 historic and religious trees were treated and provided technical advices for conservation of those trees based on requests made by Chief Monks of various temples island wide by RBG. Other than that technical advices were provided for conservation of 3 historic trees.

31 religious trees were also treated in the Gampaha area by Gampaha Botanic Garden.

11 unsafe Cyprus trees in the area were evaluated before felling and provided recommendations by Hakgala Botanic Gardens.

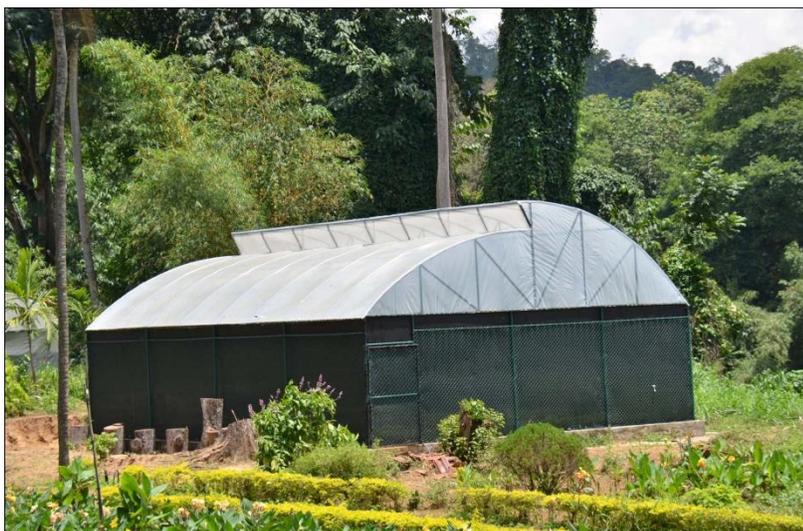
d. Plant labeling

Plant labeling programmes was carried out to improve the living collection of the gardens and disseminate information on scientific and other related data on plants for the public. Details are as follows;

Type of labels	Gardens	Amount	Section of the garden
8"x5" size labels fixed	Royal Botanic Gardens, Peradeniya (RBG)	623 Labels	Section Q, S, T,F, O , Medicinal Garden, Grass collection , Main boarder , student gardens, spice garden, Fernery, Pergola, Octagon house, Arches
	Hakgala Botanic Gardens	42 labels	Arboretum
8"x5" size labels drawn	Royal Botanic Gardens, Peradeniya	785 Labels	Fernery, F, N , Q , S, T Sections, Medicinal Garden, Grass collection, student gardens, spice garden, Pergola, Octagon house, Arches

Type of labels	Gardens	Amount	Section of the garden
	Hakgala Botanic Gardens	447 labels	Arboretum
	Gampaha Botanic Gardens	750	Arboretum
6"x5" size labels drawn	Royal Botanic Gardens, Peradeniya	107 labels	Medicinal Garden, student gardens, spice garden
48"x18" name boards fixed	Hakgala Botanic Gardens	1	Arboretum
	Gampaha Botanic Gardens	18	Arboretum

In addition to the above labels 46 stickers of the sign boards were replaced; 20 new sign boards are being made and its instructions/details will be available in German and French language as well at RBG, Peradeniya. Necessary arrangements were made to repair signage boards which were not in good condition at RBG and 10 detailed information boards on some important/specific trees are also being prepared.



Newly constructed poly tunnel in outdoor at RBG

e. Improvements to the infrastructure at gardens

Infrastructure facilities at the gardens were improved in order to enhance the services to the visitors.

Buildings, structures, were upgraded to enhance the outlook of all the gardens. New machineries, equipment, garden tools were purchased and existing machineries and equipment were repaired



New souvenir Shop at Royal Botanic Gardens, Peradeniya

for efficient management of the gardens and landscaping activities.

Culverts and drainages of all the gardens were upgraded in different sections.

Royal Botanic Gardens, Peradeniya

Main road of the garden is being upgraded by carpeting and foot paths are also being upgraded in some section of the garden (Spice garden, flower garden, river drive, Cabbage palm avenue, great circle area, Araucaria avenue, Royal palm avenue, section B, section C). Some sections were also upgraded with interlocking the land area.

Culverts & Drainage were renovated in Student Garden, behind the new welfare canteen and in-between main drive of Great circle and summer house near indoor nursery.

A New Souvenir Shop and New Ticket Counter with a modern look & with the access to disable people were constructed by Laksala.

The Octagon house and the lodge at the RBG, Peradeniya is being renovated and partly completed the activities.

A semi circular poly tunnel in the outdoor nursery-1 was established for better management of outdoor plants.

Existing old toilets were modified to the standard and a workers' shed with all the facilities was established to enhance workers well being.

While modifying the existing canteen to a



Newly constructed building for field workers at RBG



Modified Toilets at RBG



Upgraded paths in Spice garden section at RBG

field officers' office building and a garage, previous worker's shed is being renovated as a canteen. Steps were taken to establish new outdoor drinking water faucets and garden benches to provide more facilities to visitors.

06 Brand new battery operated cars were purchased to facilitate the delegates who visited the garden under CHOGM spouses' programme and also Cafeteria building was renovated and land area of the cafeteria was upgraded in order to enhance the facilitation to those delegates. It is planned to use those cars for taking visitor tours around the garden in next year (2014).

Facilities at the Education and training centre were improved by upgrading its computers. 10 new computers are being purchased with a capacity to accommodate AUTO CAD programmes used for landscape designing.

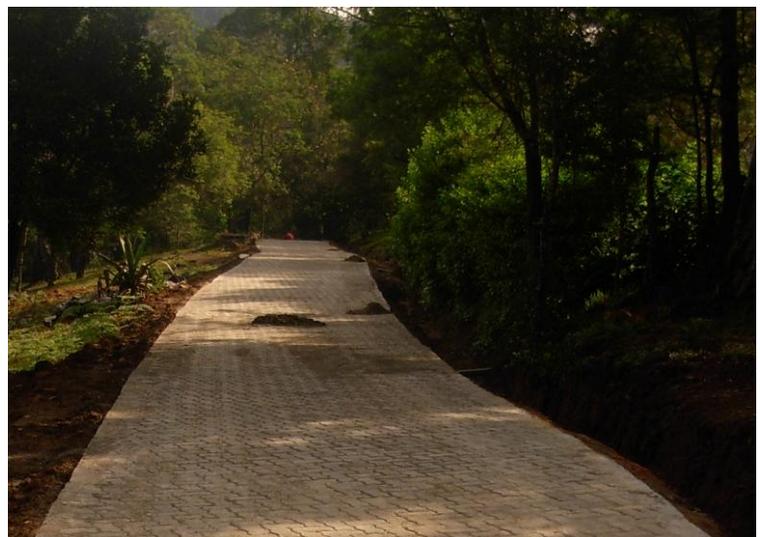


Renovation of the cactus house at RBG, Peradeniya

Renovation of the cactus house and construction of potting sheds at the Anthurium and Orchid nurseries as well as a drainage system for waste water from the laboratory has been completed. Two shade houses in the foliage section have been overlaid with new polythene roofing. A new gate was also fixed for the entrance of the foliage plant nursery for protection of the plants.

Hakgala Botanic Gardens, Hakgala

Tender was awarded to the State Engineering Corporation for establishing a new office building and construction activities will be started in year 2014.



Upgrading internal roads at Hakgala Botanic Gardens

Internal roads of the arboretum and foot paths were upgraded by laying slabs and interlocks to improve the road structure of the garden and stop land erosion. Renovation of poor drainages, edging of 1500m long carpeted road, lawns and construction of earth retaining structures in nurseries were also carried out in the garden.

Renovation of existing structures such as Poly tunnels, potting sheds were carried out for better management of plants. The water tank of the garden was also renovated and old toilets were upgraded with new equipments to enhance the public facilities.

Demarcation of land was initiated by Survey Department and surveying activities were delayed due to some issues of lands belonging to Wild life Dept. which are adjoin to the garden. The necessary approvals were obtained from the Wild life Department and surveying will be continued next year.

Henarathgoda Botanic Gardens, Gampaha

Tender was awarded to establish an Orchid house as conservatory and display house for public to the State Engineering Corporation and construction will be started in next year.

Construction of a summer house, a nursery office, a poly tunnel was carried out in order to enhance infrastructure facilities at the garden.



Developed car park at Gampaha Botanic Gardens

Education centre, car park & drainage system, paddle boats and other building & structures were renovated.

Existing field office building is being renovated by the Building Department to a modern look.

Ganewatta Medicinal Plant Gardens

Establishment of the Chain link fence around the garden was completed to protect valuable trees planted in the garden.

Plant house was established for better management of plants. Currently establishment of vegetation is in progress.

Construction of an office quarters was completed and new furniture was purchased for the herbarium/exhibition hall.

Plans are finalized and estimates were prepared for construction of water well with pump house and Chain link for the new quarters.



Establishing the chain link around the garden at Ganewatta Medicinal plant garden

6.1.2. Establishment of new botanic gardens

There are two new botanic gardens are being established considering the increased number of visitors to the existing botanic gardens and plant conservation purposes in different zones as 15 floral regions of the country have been identified. It is planned to establish a new botanic garden in Northern Province as well.

a. Mirijjawila Dry Zone Botanic Gardens, Hambantota

Mirijjawila Dry Zone Botanic Gardens, Hambantota is the first botanic garden developed by the local experts after 130 years. It was officially opened this year on 07th November by His Excellency Mahinda Rajapaksha the President of Democratic Socialist Republic of Sri Lanka.



Newly developed entrance area of the Dry Zone Botanic Gardens



H.E. the President officially opening the Dry Zone Botanic Gardens

A tree planting programme was held on 14th November at 4.30 pm at the Mirijjawila Dry Zone Botanic Gardens, Hambantota with the participation of H.E the President and visiting Heads of Government to commemorate the holding of Commonwealth Heads of Government Meeting (CHOGM) in Sri Lanka. Mirijjawila Dry Zone Botanic Garden was officially opened to the public on the same day.

All major construction activities which are continued from last year at the gardens were completed with its opening.

i.e entrance complex and the car park; three summer houses with toilets; a bachelor quarters. Installation of



Upgraded internal roads at the Dry Zone Botanic Gardens



Planting a tree by H.E. the President



Leading the President of Vanuatu by Hon. Minister and the Secretary to the Planting programme

drinking water scheme was established. Improvement of internal road network was carried out. New areas were developed and new landscape features and structures were added such as the main formal garden, foot paths, avenues and shrub gardens, cactus collection, etc.

Floriculture development activities were also enhanced at the garden to facilitate the growers of the area. Living plant collection of the garden was enhanced and the floriculture extension office and two shade net houses were established (please see more information on floriculture related activities carried out at the gardens on the pages 20-28).

b. New Wet Zone Botanic Gardens, Avissawella

25 acres of land adjoining to the garden was obtained during this year as an extension to the garden and other development activities was also continued during this year aiming towards the opening of the garden in 2014.

Establishment of the main entrance and visitor center are being carried out by the State Engineering Corporation and 90% of its construction activities were completed. A pond is being developed near the



Developed entrance area at Avissawella Wet Zone Botanic Gardens

entrance area for beautifying the area. An expansion activity of the lake was completed during this year and Kumbuk garden area was also expanded. Internal road network was upgraded by laying interlocks to enhance the outlook of the garden and improve the condition of roads. 6 km were upgraded during this year.



Expanded lake at Avissawella Wet Zone Botanic Gardens

Establishment of a Rose garden in about 5 acres in upper area of the garden is being carried out. Land clearance and earth filling activities were completed while doing the establishment.



Development activities of Rose garden Avissawella Wet Zone Botanic Gardens

Floriculture development activities were enhanced at the garden to facilitate the growers of the area and living collection of the garden was enhanced by the planting programme. Five *Terminalia arjuna* trees were root balled and replanted in the kumbuk garden.



Replanted *Terminalia arjuna* trees at Avissawella Wet Zone Botanic Gardens

Hon. Jayarathna Herath, Minister of Botanical gardens and Public Recreation and Hon. Geethanjana Gunawardena, Deputy Minister of Civil Aviation visited the garden to inspect the development of the garden.



Hon. Ministers visiting at Avissawella Wet Zone Botanic Gardens

6.1.3. Development of amenity horticulture

Cultivation, care and maintenance of plants in heavily populated, high human traffic areas are referred to as Amenity Horticulture. Several activities and advisory programmes were carried out to develop public areas.

Advisory services provided by the RBG on landscape gardening at following institutional land areas are listed below;

Sacred places

Madanwala Raja maha Viharaya
Malwathu Maha Viharaya Kandy
Malwathu viharaya
Taliyalpitiya purana viharaya

Hospitals

Dikoya New hospital
Kegalle General Hospital

Schools

St. Anthony's College, Katugastota
Kobbakaduwa College

Other places

Planetarium of Colombo
“Nelum Pokuna”, Drama Theatre
Hantana tea Museum
Tourist promotion office, Matale
Army Camp, Gannoruwa
River Side Engineering Training Institute, Kotmale
International training Institute, Kotmale
“Kulubadu Arana” Spice Garden of Department of Export Agriculture, Matale

In addition to the above advisory programmes,

landscape gardening activities were carried out at “Dayatakirula” Exhibition Site in Ampara during 2013. Advices were given on root balling programme of Baobab Tree in Manar Islands. And also officers of the RBG provided their expert knowledge for landscaping activities while developing the Mirijjawila Dry Zone Botanic Gardens, Hambantota.

Advisory services provided by the Gampaha Botanic Garden on landscaping and gardening of public places are as follows;

Actively participated in “Sundara Gampaha” programme for providing advices for beautification the city area and enhance the landscaping feature of the Gampaha area. Under this project, following advisory programmes were carried out on landscaping for institutions listed below.

Urban Council, Gampaha
Development of Hamilton stream
Development project of Minuwangoda town
Rthanwali Balika Vidyalaya, Gampaha
Magistrate Court, Gampaha

Vocational Training Authority, Gampaha
District Secretariat, Gampaha
Court complex, Gampaha
Henerathgoda Railway station

In addition to the above advisory programmes tree planting programmes were carried out along the roads in the area.

Advisory services provided by the Hakgala Botanic Garden on landscaping and gardening of public places are as follows;

Police Station, Lindula
Development project of urban garden at Nuwaraeliya

EDUCATION

We aspire to

- Raising awareness of plant conservation issues and promoting the importance of plant conservation in sustainable development and use a diversity of programs reach a wide range of public, including children, adults and professional educators.
- Address the unemployment of the country via filling the gap in the market by providing training opportunities for young floriculturists who are seeking higher qualifications and for the local gardeners seeking foreign employments by offering an externally accredited National Diploma courses in Floriculture and Landscape Gardening/design.

Objectives

- Diversify the Training course to match the current needs
- conduct lectures, exhibitions and use of other media for education
- Publication of printed materials
- Introducing modern communication technologies

7.1. Programmes implemented towards achieving objectives

7.1.1. Diversify the training courses to match the current needs

The Department is in the process of diversifying the education programmes currently conducted at the education and training centre aiming to enhance livelihood skills on floriculture and other related areas, to enhance knowledge and interest on plants in the public, biodiversity conservation among school children and general public.

Therefore, Education and Training Centre of the department performed several activities to obtain National competency standards under National Certification System of Tertiary Education and Vocational Commission of Sri Lanka for the training programmes conducted.

As a result, Department offers an externally accredited one year National Diploma Course and 2 year Higher National Diploma course in Floriculture and Landscape Gardening/design, providing opportunities for youth and interested individuals who are engaged in floriculture sector to gain higher qualification with job oriented training.

These courses are envisage to fill the gap in the market by offering opportunities for young floriculturists seeking higher qualifications and providing training opportunities for the local gardeners seeking foreign employment

7.1.2. Conduct lectures, exhibitions and use of other media for education

Other than the education and training programmes conducted on bio diversity, taxonomy, floriculture, etc., by related units the Education centre of the Botanic Gardens involved in delivering regular lectures, exhibit within Botanic Gardens and participate in outside exhibitions in order to communicate to the public about important aspects on specialized subjects.

a. Lectures

Short term (1day) trainings classes conducted by the Education and Training Centre are listed in the table below;

Field of the training	Individuals trained
Nursery Management	729
Identification of garden landscaping plants	488
Tree Care & Maintenance	161
Landscaping	2,037
Post harvesting Technique	66
Plant Morphology	50
Floral decorations /Arrangements	522
Other related fields	1,302
Total	5,085

In addition to the above short term trainings; intensive three-month certificate courses based on modern floricultural techniques and landscaping were conducted for 96 youths at the Education and Training Center of Royal Botanic Gardens (RBG), Peradeniya. 253 army personnel were trained on landscaping gardening at the Education and Training Centre of RBG, Peradeniya.



Students of 3 months duration course on Floriculture and Landscaping engaging in practical sessions

At the Gampaha Botanic Gardens following training programmes were conducted on landscaping and floriculture;

Subject	Duration	Number of Classes	No. of participants
Nursery Management	01 day classes	01	03
Landscaping	01 day classes	02	70
	14 day practical course	01 01	19 04
Landscaping and Floriculture	06 month course	01	12

In addition to the above trainings, two months duration landscaping course was started in December for army personals on landscape gardening.

b. Exhibitions

Officers participated in organizing and manning a stall of the Department of National Botanic Gardens at the “Seethawaka Abiman” exhibition at Padukka from 9th-13th January.

Officers were also involved in organizing and manning a stall showcasing different aspects of cultivation various aspects of floriculture crops as well as activities of this Department at the “Govi Sathiya” exhibition conducted by the Department of Agriculture at Wriyapola from 08th to 12th of July.

Officers of the department provided their expertise knowledge to preparation of exhibition

site in Dayata Kirula” National Exhibition held to commemorate the 65th Independence Day in Ampara from 23rd to 29th March 2013 as well as installed a stall with plants and plant related products for display and information was disseminated on site to the public.

c. Media programmes

TV programme as nature documentary series on plants, “Thuru Visithuru” is being conducted in collaboration with Rupavahini Television Channel by Dr. Siril Wijesndara, Director General of the department with the help of the officers at the department. The public make aware about different kind of plants in nature & their benefits and generate interest on plants among the public via the programme.



Disseminating information on floriculture by an officer at “Dayata Kirula” National Exhibition

Officers were involved as resource persons in the production of 08 radio programmes related to crop cultivation and development activities of the floriculture sector as well as pest and disease managements.

A programme to be telecast on the Independent Television Network (ITN) was recorded at the floriculture unit at Peradeniya with the participation of officers Mr. U. B. Palipane and Mr. M. M. K. P. Walikumbura on the cultivation aspects of Gerbera, Begonia, African Violets, Calathea, Maranta and Cyprus.

Four articles were published on Orchids in 'LAKBIMA' news paper, authored by Ms. W. M. D. E. R. Andrathi.

7.1.3. Publication of printed materials

Publications on flora, gardening and floriculture were prepared and published during this year.

a. Publications

The book on "Wild Flowers of Sri Lanka" was compiled and is being printed. This book contains information on scientific/common names, conservational status, habitat, etc. of 250 species with photographs.

The book on "Common Wayside Trees of Sri Lanka" was also being compiled during this year and it encloses the information on scientific/common names, distribution of 200 species with photographs. Information of both books is available in Tamil and Sinhala languages and both books will be published in 2014.

Preparation of the book on Moss Flora in Central Highlands of Sri Lanka is being carried out by the National Herbarium.

03 leaflets on Lower Plants, 01 leaflet on Flowering Herbs and Climbing Plants and 5 leaflets on Herbarium related work are also

පෙරාදෙනීය රාජකීය උද්භිද උද්‍යානයේ සාරාංශයක් සහ වර්ගීකරණය
දුර්ලභ ගණයේ විදේශීය ශාක
 පත්‍රිකා අංක 01

රාජකීය උද්භිද උද්‍යානයේ පේරාදෙනිය

දේශීය විද්‍යාත්මක ශාක
 වෘක්ෂාංග නාමය : *Canarium indicum*
 ශාක පවුල : Burseraceae
 ශීර්ෂමය : මැලේසියාව, ඉන්දියාව, පැපුවා නිව්ගිනි, ඔස්ට්‍රේලියා දූපත්

දේශීය විද්‍යාත්මක ශාක
 වෘක්ෂාංග නාමය : *Gualacum officinale*
 ශාක පවුල : Zygophyllaceae
 ශීර්ෂමය : කිවර්තන ඇමරිකාව, මෙක්සිකෝ

දේශීය විද්‍යාත්මක ශාක
 වෘක්ෂාංග නාමය : *Ochroma pyramidale*
 වෘක්ෂාංග නාමය : Balsam, Cork wood, ඔල්ෆා
 ශාක පවුල : Malvaceae (Formerly Bombacaceae)
 ශීර්ෂමය : කිවර්තන ඇමරිකාව, ඔට්ටම් ඉන්දියා දූපත්

Leaflet on Exotic Plants prepared by RBG

being prepared by the National Herbarium.

02 leaflets on 10 Exotic plants were designed and also, two educational leaflets on 10 Endemic Plants are continued by the Royal Botanic Gardens, Peradeniya.

b. Floriculture related publications

News letters on activities of the ‘Suwehas Mal’ programme were published in 02 volumes. A total of 8,000 News letters were printed for distribution (i.e. 4000 newsletters each for each volume).

1000 copies each of 15 leaflets on various topics were reprinted. A book on titled “cultivation of selected floriculture crops” including information on the cultivation and maintenance aspects of over 30 plants was compiled and published.

c. Other

Steps were taken to make available the guide map of Royal botanic Gardens and map of Hakgala garden in main 3 languages; Sinhala, Tamil and English.



Leaflets on Floriculture prepared by Floriculture Research and Development Unit



News letters on Floriculture published by Floriculture Research and Development Unit

RUNNING THE OPERATION

We aspire to

- Review policies and practices every year and making efforts for continuous improvements and efficiencies of the gardens embedding good practice in ongoing process and updating and revising carder positions, filling vacancies on time and improving facilities of the staff.
- Explore the implication of e-commerce implementation via the website especially on merchant account that allows accepting payments by debit or credit cards for advance payment prior to the visit of Botanic gardens

Objectives

- Staff requirements and facilities
- Application of Information Technology

8.1. Programmes implemented towards achieving objectives

8.1.1. Staff requirements and facilities

Staff requirements were fulfilled and facilities were upgraded during this year for enhance the efficiency of the gardens functions.

a. Staff facilities

Officer quarters no. 2 at Gampaha Botanic garden, some staff quarters at Royal Botanic Gardens, Peradeniya were renovated to enhance working condition of the employees.

New office area was added to the departmental head office after obtaining part of a building owned by Hadabima Authority which is located at the same premises of the department for increasing the office area for the staff. The administration division was established in the new building after modifying it to a new look. Obtaining the other part of the building is also being initiated this year.

A conference hall was established and furnished at the Departmental head office premises, which was not available before at the department for conducting meetings.



New office area added to the Department Head Office

b. Revision of cadre positions and filling the vacancies

Approval was obtained for 20 new cadres of graduate Development officers from Department of Management Services.

New recruitment/promotional procedures for Primary semi-skilled cadre (PI-2), special laboratory labour cadre (PL-2) and Assistant charge collectors' cadre (MN-1) were approved by the Public Service Commission.

Recruitment procedures of Management assistant technical iii (MT-1) was approved with amendments and Primary non technical (PL-1) and scientific service procedures were sent to the Public Service Commission for final approval.

13 officers currently at the Department working at the department who were under the agricultural service were absorbed to the scientific service.

c. Progress monitoring

Progress of the activities planned for the year was monitored throughout the year conducting monthly progress review meetings. Issues related to implementation of activities planned, regular operations at the gardens and units and other related issues were discussed at the meeting.

8.1.2. Application of Information Technology

The payroll accounting system of the Department was transferred to electronic media from this year and currently all the payrolls of the permanent staff (510) is calculated by a computerized system which increases the accuracy and reduces the time consumed.

Establishing mobile ticketing system at Royal Botanic Gardens, Peradeniya where customers can order, pay for, obtain and validate tickets from any location and at any time using mobile phones prior to the visit of the botanic garden were initiated as an E-commerce implementation activity. This will increase customer convenience by providing new and simple ways to purchase tickets.

MANAGEMENT OF OTHER UNITS UNDER THE DEPARTMENT

9.1. Residential Gardens of H.E. the President and Hon. Prime Minister

Residential gardens of H.E. the President at Temple Trees, President houses at Colombo, Kandy, Nuwara Eliya, Anuradhapura and residential gardens of Hon. Prime minister in Colombo, and Nuwara Eliya were maintained at high standards.

Development activities were carried out at both Residential gardens of H.E and Hon. Prime minister's residential gardens to beautify the gardens and enhance standards of the gardens as planned.

All the internal roads at Nuwara eliya Residential gardens of H.E. the President were upgraded by carpeting and curbs were placed at two sides of the roads for enhance the outlook of the garden. The lawn was also upgraded by turfing. Two new poly tunnels were established at the gardens for growing vegetables and good management of vegetables grown there. The boundary fence around the garden is being renovated by Army personals.

A new vegetable garden was established near the plant house established by the Department of Agriculture at the residential gardens of H.E. the President at Kandy and it was maintained well during the year. An unsafe tree (*Agathis robusta*) was removed from the premises by the State Timber Corporation.

Conservational activities were carried out to conserve Old Mango Trees in collaboration with Department of Agriculture in the Residential garden of the Prime minister in Colombo. Plant house was renovated with a new look and replaced new potted



Dr. A.P.L. Abdul Kalam former President of India is planting a Red Sandalwood tree in presidential garden at the Temple Trees



H. E. the President at newly established vegetable garden in Kandy residential garden



Prime minister's residential garden, Colombo

plants to beautify and tidy the place. Cement containers were constructed in gardens to store planting materials to do up the area. Turf renovation activities were also carried out at some sections of the garden to beautify the garden.

Flower, vegetables and fruits plants nurseries were maintained lucratively at all the residential gardens and supplied flowers, vegetables and fruits when necessary for in house purposes and other official events in the residences during this year as well.

9.2. Commonwealth War Cemeteries

The Commonwealth war cemeteries are maintained for the commemoration of Commonwealth of Nations military service members who died in the two World Wars. There are 4 Commonwealth War Cemeteries (CWC) maintained in Sri Lanka at Kandy, Jawatte, Borella and Trincomalee. They were maintained at high standard by the Department every year.

Activities carried out at the war cemeteries during this year are as follows;

Final stage of turf renovation was completed with Zoysia grass at Jawattha war cemetery and second stage of turf renovation at Borella CWC.

Entire lawn of the Kandy CWC was damaged by Cockchafers and damage was completely controlled by applying insecticides at lawn.

Turf renovation activities using Axonopus grass was carried out at Kandy CWC to level the surface of headstones boarders land area and to control Cockchafers damage.

Third phase of turf renovation activities was completed in 1000 square meters using Santana grass at Trincomalee CWC.

A new uniform was introduced to the staff of all the CWC by Commonwealth war graves commission with their logo.



CWC at Jawatta



CWC at Trincomalee

Kandy war cemetery was awarded the 2nd place as well maintained Garden for year 2013 under supervision of government department at the competition held by the Department of Agriculture of central province.

A Foreign delegate from United Kingdom visited the Jawattha CWC and admired the management of the garden.



Foreign delegate from UK visiting the CWC at Jawatta



CWC at Kandy

9.3 Botanic Gardens Trust Fund

Botanic Garden Trust Fund was set up pursuant to a Cabinet approval on 07th February 1996 for developing botanical gardens and its welfare.

25% out of the income from ticket sales at botanical gardens is allocated for the Trust Fund to improve botanical gardens and its welfare, which is the main income source of this Fund.

Main objective of the fund is to provide financial assistance for development activities at botanical gardens and extend financial assistance for recurrent activities when necessary. The objectives of the trust funds are;

- Promoting botanical gardens in Sri Lanka within the country and in other foreign countries
- Implementing significant programmes on education programmes and plant conservation
- Improving facilities and activities leading to broad base scientific know-how of scientists attached to the botanical gardens as well as extending financial assistance to purchase equipments needed
- Formulating an extensive programme on plant collection
- Providing financial assistance for improving technical, education & training activities as towards the development of the botanical gardens
- Undertaking any urgent construction to facilitate scientists and special delegates visiting the botanical gardens
- Covering recurrent expenditure at any given specialized programme

9.3.1. Development activities 2013

During year 2013, several development activities carried out at gardens with the financial assistance of Botanic Gardens Trust fund are listed in the table below.

	Activity	Unit
1.	Developing facilities and beautifying activities of botanic gardens were carried out to enhance the standards of gardens	Royal Botanic Gardens, Peradeniya Hakgala Botanic Gardens Gampaha Botanic Gardens
2.	Upgrading internal road network	Royal Botanic Gardens, Peradeniya Hakgala Botanic Gardens, Gampaha Botanical Gardens
3.	Renovation of canteen building to a fled offices' office premises	Royal Botanic garden, Peradeniya
4.	Completed construction of new workers' shed	-Do-
5.	Renovation of existing workers shed to a canteen with a modern look	-Do-
6.	Modification of old toilets	-Do-
7.	Renovation of cafeteria Building	-Do-
8.	Renovation of cactus house, drainage system at floriculture tissue culture club	-Do-
9.	Construction of potting house for Anthurium house	-Do-
10.	Carrying out scientific research activities	National Herbarium
11.	Renovation of garden's water tank	Hakgala Botanic Gardens
12.	Purchasing planting materials	Royal Botanic Gardens, Peradeniya Hakgala Botanic Gardens
13.	Purchasing new books and printing informational materials	National Herbarium Royal Botanic Gardens, Peradeniya
14.	Update facilities at Education centre	Royal Botanic Gardens, Peradeniya
15.	Purchasing battery operated cars	Department

Annual capital allocation for year 2013 of the trust fund was Rs. 115 million and Rs. 68.5 million (59.6%) was utilized for development of Botanic Gardens this year. There was delaying receiving funds from the Treasury in last 2 months this year. It delayed the payment of some activities.

9.4 Meegallawa Haritha Piyasa

Field office building is being renovated and plans are made for planting programme. Land development activities also carried out for beautifying the premises.



Renovated field office building at Meegallawa



Hon minister visiting Meegallawa Premises

9.5. Sri Maha Bbodhi at Anuradhapura

Health of the Sri Maha Bbodhi tree at Anuradhapura was looked after during this year as well and attended for several health issues this year in order to maintain a good health of the tree.



Director General of the Department attending at some health issues of the Sri Maha Bbodhi

ARRIVAL OF SPECIAL DELEGATES AT THE GARDENS

Different categories of delegates from different countries visited gardens and admired garden maintenance and landscaping features.

Garden	Delegates	Date	Country
Royal Botanic Garden, Peradeniya	Brigadier General and other 27 officers	2013.01.10	Nepal
	Foreign Minister and other representatives	2013.02.10	Estonia
	Deputy Speaker and Ambassador, conducted a watering ceremony to <i>Diopyros ebenum</i> planted by former Prime Minister of Vietnam Mr. Van Dong	2013.02.10	Vietnam
	20 school principals	2013.02.20	Maldives
	HE Luo Fuhe, Vice Chairman of the Chinese People's Political Consultative Conference to Sri Lanka and 8 other representatives	2013.03.10	China
	Nepal, India & Thailand ambassadors' spouses accompanied by Malaysian members	2013.03.20	-
	4 Bhikkus of Thailand Buddhist association and two Army Generals of Thailand Army	2013.03.22	Thailand
	Lieutenant General Mr. R. N. Singh, Director General, Military Intelligence	2013.03.20	India
	Members of the Saudi Arabian Royal Family	2013.03.25	Saudi Arabia
	Director General & three other members of Foreign Ministry	2013.06.10	Venezuela
	Vice Admiral of Indian Coast Guard Defence force, Mr. Anurag G.Thappiyal	2013.06.20	India
	Mr. Tahir Habeeb , Army General	2013.07.20	Pakistan
	Mr. Wasu Fungsumarut, Major General of Thailand Army	2013.07.25	Thailand
	Her Royal Highness Princess, Tsuguko Takamado of Japan. Conducted a tree planting ceremony planting a <i>Diospyros ebenum</i> .	2013.08.19	Japan
	Her Royal Highness Princess, Maha Chakri Sirindhorn of Thailand. Conducted a tree planting ceremony planting a <i>Cassia fistula</i> .	2013.08.22	Thailand
	Mr. I.U. Khan, Naval admiral and six other members	2013.09.06	India
	Euripids Enviyades, Cyprus high commissioner to Great Britain and other Cyprus representatives participated for CHOGM	2013.11.12	Cyprus
	Spouses of Foreign Ministers participated in CHOGM	2013.11.14	-
	His Royal Highness Prince Charles of Great Britain	2013.11.17	England
	Island Mr. Jean Paul Adam, Minister of Foreign Affairs, Seychelles and his wife	2013.11.18	Seychelles
14 Education officers and 10 officers of National Institute of Education	2013.12.12	Maldives	
Hakgala Botanic Gardens	Mr. Nayen Di Kin Gann, Parliamentary vice president	2013.02.28	Vietnam

Visit of HRH Prince of Wales

His Royal Highness Prince of Wales visited Royal Botanic Gardens, Peradeniya on 16th November 2013 and spent one hour, walking around the garden admiring the plants and the aesthetic beauty of the garden.

Visit of Commonwealth Heads Of the Government Meeting (CHOGM) Delegates

06 delegates under the Spouses Programme of CHOGM and other officials visited the garden and officers of the Department accompanied them on a guide tour around the gardens by newly purchased battery operated cars.



HRH Prince of Whales visiting the Royal Botanic Gardens, Peradeniya



CHOGM Delegates visiting the Royal Botanic Gardens, Peradeniya



Official Visit of Vietnam Deputy Speaker at RBG



Official Visit of Spouses of Foreign Ministers, CHOGM

SPECIAL EVENTS AT THE BOTANIC GARDENS

Naming 2 new hybrids by 2 Princesses

An Orchid Hybrid produced by the Floriculture Research Unit, [Cattleya Queen Sirikit X Cattleya Cey-roshel (C 1779); Magenta coloured flowers with dark magenta and yellow mixed lip] was named in honour of Her Imperial Highness Princess of Japan, Tsukugo of Takamado to mark her visit to the Royal Botanic Gardens on 20th August 2013.

An Anthurium hybrid with purple to pink flowers (a cross between Anthurium Aruly and A white flowered Lady Jane Type) was also named in honour of the visiting Thai Princess Her Royal Highness Princess Maha Chakri Sirindhone who visited the Royal Botanic Gardens on the 21st of August.

National Symposium on Floriculture Research (NaSFloR) -2013

The National Symposium on Floriculture Research 2013 was organized by Floriculture Research and Development Unit of the Department and conducted as a collaborative event of the Sri Lanka Council for Agriculture Research Policy (CARP) on the 19th of December at the Auditorium of the Royal Botanic Gardens, Peradeniya. A total of 13 research papers and 02 posters were presented at the symposium by various Relevant Departments and Universities. All the research was demand-driven and focused on Development of the Sector.

It was a fruitful session where gathered the researchers and clients in the private sector who involved in the industry both together and had a successful discussion forum.



Naming a new hybrid by Japanese Princess



Naming a new hybrid by Thai Princess



A Session at NaSFloR 2014

ADVISORY SERVICES PROVIDED BY THE DEPARTMENT

12.1. Floriculture

“Plant Clinic” held at Ja-ela, Nittumbuwa, Ganemulla and Minuwangoda were assisted by officers of Floriculture Unit at Gampaha Botanic Garden and technical advices were provided to growers participated at the clinic. There were 65, 80, 35 & 60 growers participated in the programme.

Officers of this unit participated as judges at the Nuwara Eliya Seasonal Flower Show on the 17th and 18th of April and provided their expert knowledge on judging the best flower stalls at the event.

Officers participated in conducting training programmes in 25 divisional secretariats of the Gampaha, Kandy and Nuwar Eliya districts on future plans and activities of the Agriculture sector for the 4th phase of the “Divinagama” programme to be implemented in 2013 island wide. These divisional secretariat divisions include Haton, Nuwara Eliya, Walapane, Hanguranketha, Kothmale, Doluwa, Delthota, Akurana, Hasalaka, Poojapitiya, Gangawata Korala, Nawalapitiya, Ja-ela, Minuwangoda, Kalaniya, Gampaha, Dompe, Negombo, Katana, Mahara, Wattala, Divulapitiya, Maradaghamullla, Athanagalla and Meerigama.

Other than the above advisory programmes, advices on matters related to commercial floriculture, nursery management, pest and disease management as well as *in vitro* propagation was provided to individuals personally visiting this unit or by Post.

	Mode of Contact	Number of individuals advised
1.	Individuals visiting the unit	278
2.	Contact by phone	701
3.	Post/ Letters	46
4.	School projects – individual visits	
	Orchids	38
	Anthuriums	06
5.	On site advice – Officers visiting nurseries in various parts of the country	47
	Total	1,116

12.2. Authentication and Dissemination of Botanical Information

Accurate botanical information on plants and other related areas were disseminated to the general public, students, government institutes and private organizations where as necessary.

a. Botanical Information

1,304 people (school children, University students, etc.) visited the Herbarium including 10 foreigners from different institutions to observe the functions and gain knowledge on herbarium techniques & management and also for research purposes.

111 letters were answered on botanical information requested by the public and other related parties.

b. Identification of specimens

979 flowering plant species, 76 fern specimens and 15 Mosses specimens were identified for government and non government institutions.

43specimens of research conducted by Nature's Beauty Creations Ltd, Horana, 12 specimens of medicinal plant research conducted by Ayruwedic Department and 17 medicinal plant specimens of a medicinal plant research conducted by the faculty of Medicine, University of Peradeniya were deposited as voucher specimens at herbarium with authentication.

14 specimens of post graduate research conducted by students at Post Graduate Institute, University of Kelaniya, 7 specimens of a research conducted by the student at Post Graduate Institute of Agriculture, University of Peradeniya and 11 specimens of post graduate researches conducted by three students of the Institute of Biochemistry, Molecular Biology and Biochemistry, University of Colombo certified and deposited as voucher specimens.

10 other voucher specimens were deposited at the herbarium under several researches conducted by undergraduate students of Universities.

02 type of specimens *Cryptocoryne waseri* received from Germany (collected from Ingiriya forest reserve near Yahalawatta) which is a new Sri Lankan species described by German scientist were deposited as voucher specimens.

c. Legal purposes

Prepared 5 wood anatomical slides for identification of *Santalum album* wood samples handed over by Department of Forest and prepared 10 wood anatomical slides of *Gyrinops walla* specimens submitted by Police station-Hatton for legal purposes

15 wood anatomical slides of *gyrinops walla* and *santalum album* specimens were prepared for police station-Hatton. And Majestic Courts Pallegama, Matale respectively for legal purposes.

ACTIVITIES PLANNED FOR YEAR 2014

Programme in Mahinda Chintana Policy Document	Activities Planned
<p>A sustainable policy for environmental conservation and eco tourism promotion</p>	<p>Continuation of the development activities of the Mirijawila Botanic Gardens initiated for the conservation of low country dry zone plants:</p> <ol style="list-style-type: none"> 1. Establishment of a plant house 2. Continuation of development of road network. 3. Carry out floriculture nursery development activities to provide facilities for growers around the area and conduct training programmes on floriculture for public including school children. 4. Planting and plants conservation programs. 5. Landscape development activities. <p>Continuation of the development activities of the Avissawella, Illukovita Botanic gardens initiated for the conservation of low country wet zone plants:</p> <ol style="list-style-type: none"> 1. Completing establishment of main entrance complex with the visitor centre. 2. Development of internal road network. 3. Carry out land development activities to enhance landscape features of the garden. 4. Enhance living collection by planting programme. 5. Develop floriculture development activities at the garden to facilitate the growers of the area.
<p>Ensuring the biodiversity conservation</p>	<ol style="list-style-type: none"> 1. Continuation of the studies on lower plants such as lichens, bryophytes. 2. Ex-situ conservation of Sri Lankan flora. 3. Improve medicinal plant collection as Inguru, Arattha, etc.. for commercial production.

Programme in Mahinda Chintana Policy Document	Activities Planned
	<ol style="list-style-type: none"> 4. Carry out the Botanical survey for exploration, collection of plant specimens, mainly threatened plants of dry and wet zone. 5. Carry out scientific studies and research on plant taxonomy, diversity and other related areas. 6. Continuation of conservation of trees with historic and or religious importance. 7. Conducting of at least 10 field explorations by each botanic garden. 8. Continuation of computerization of herbarium specimens. 9. Anatomical investigation of Sri Lankan plants. 10. Initiate research on micropropagation of rare and threatened plants of Sri Lanka.
Equipping farmers (in floriculture) with required technological and other skills	<ol style="list-style-type: none"> 1. Carry out relevant research programmes related to floriculture development. 2. Conduct training programmes and workshops for growers to enhance their capacity on floriculture development. 3. Organize exhibitions to enhance the marketing capabilities of growers in floriculture. 4. Provide high quality mother plants of new varieties to the growers and introduce value added products. 5. Visit plant nurseries of growers under the “Suwahas Mal” Programme to monitor and provide onsite advices for their problems arisen in the field. 6. Holding exhibitions on floriculture, environment conservation within and outside the botanic gardens. 7. Publication of leaflets, conducting TV programmes on floriculture and landscape gardening. 8. Organizing floriculture growers by setting up of Floriculture Farmer Organizations.

Programme in Mahinda Chintana Policy Document	Activities Planned
	<ol style="list-style-type: none"> 9. Carry out floriculture promotion programme for up lift the floriculture industry in the country. 10. Establish cut flower sales out let in a strategic place in Colombo. 11. Conduct educational/training programmes and workshops on Plant Taxonomy and Conservation, Bio diversity and other related areas
Initiate long and short term research programmes on potential ornamental plants.	<ol style="list-style-type: none"> 1. Exploration and introduction of new variants and potential wild species at national level in collaboration with the industry. 2. Research and development of Agronomy and other aspects of newly discovered plants as well as commonly grown ornamentals. Bio fertilizer recommendations for floricultural crops. 3. Research on Pre and post harvest handling of floriculture crops. 4. Conducting research on tissue culture and bio technology. 5. Research on aquatic plants with floriculture potential 6. Research on Pest and Diseases 7. Research on flower induction techniques
Livelihood skills development programmes	<ol style="list-style-type: none"> 1. Conduct intensive 3 months, 1-year and 2-year diploma courses for youth on floriculture and Landscaping. 2. Providing Advisory services on floriculture, amenity horticulture and plant conservation.

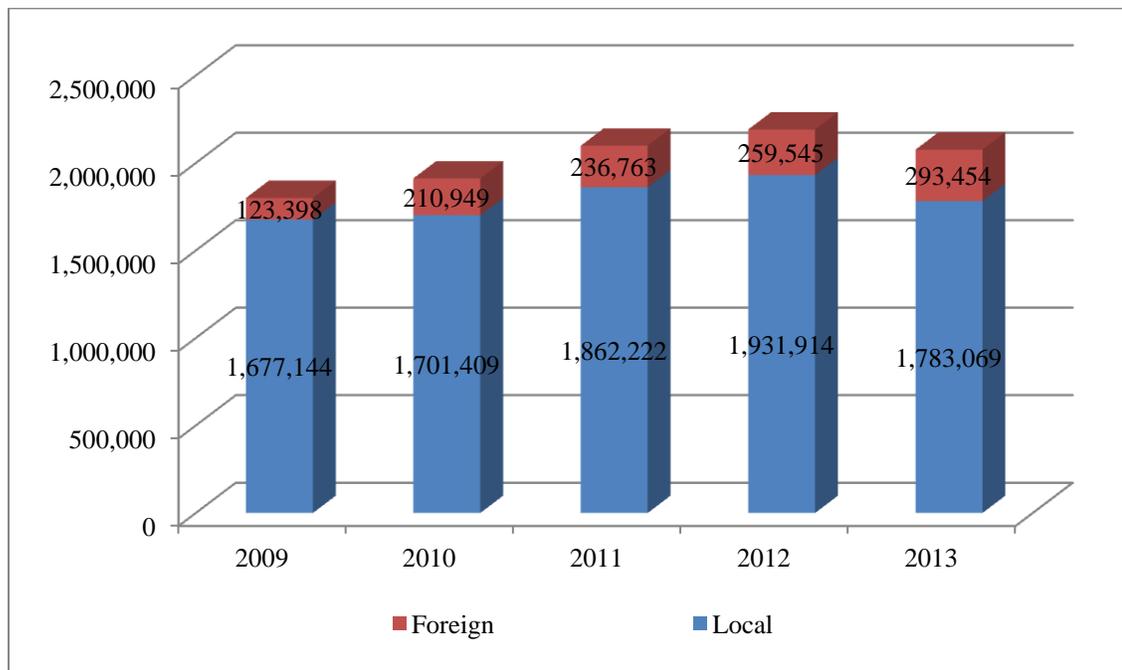
APPENDICES

Appendix 1: Visitations – Year 2013

1. Numbers of visitations at the main 3 gardens and newly opened garden at Mirijjawila

Visitor Category	Peradeniya	Hakgala	Gampaha	Mirijjawila	Total
Local Adults	809,916	374,939	188,054	7,170	1,380,079
Local Children	237,123	127,737	16,978	2,738	384,576
Senior Citizens	7,177	9,197	1,204	836	18,414
Total Local Visitors	1,054,216	511,873	206,236	10,744	1,783,069
Foreign Adults	263,670	13,292	213	6	277,181
Foreign Children	11,578	969	9	0	12,556
Foreign Students	3,251	452	14	0	3,717
Total Foreign Visitors	278,499	14,713	236	6	293,454
Total No. of Visitors	1,332,715	526,586	206,472	10,750	2,076,523

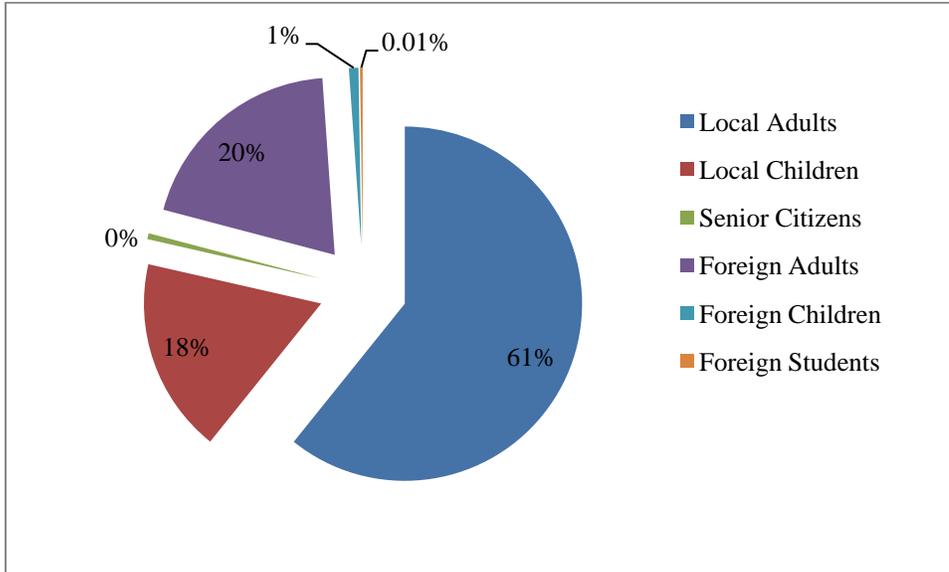
2. Annual total Foreign and Local visitor arrivals at garden



3. DISTRIBUTION OF VISITOR NUMBERS AT GARDENS

3.1. Royal Botanic Gardens, Peradeniya

3.1.1. Royal Botanic Gardens Attendance: Distribution of visitor categories -2013

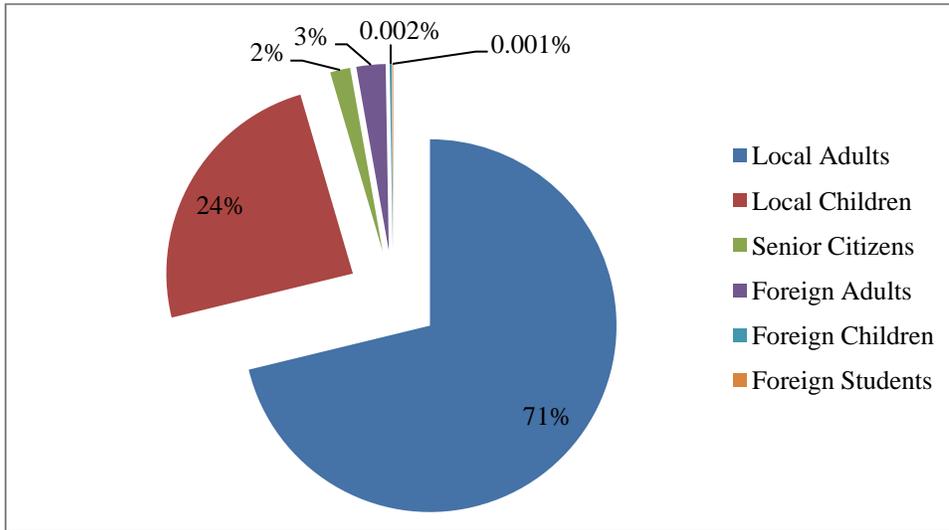


3.1.2. Royal Botanic Gardens Attendance: Visitor Numbers (Comparison with last year)

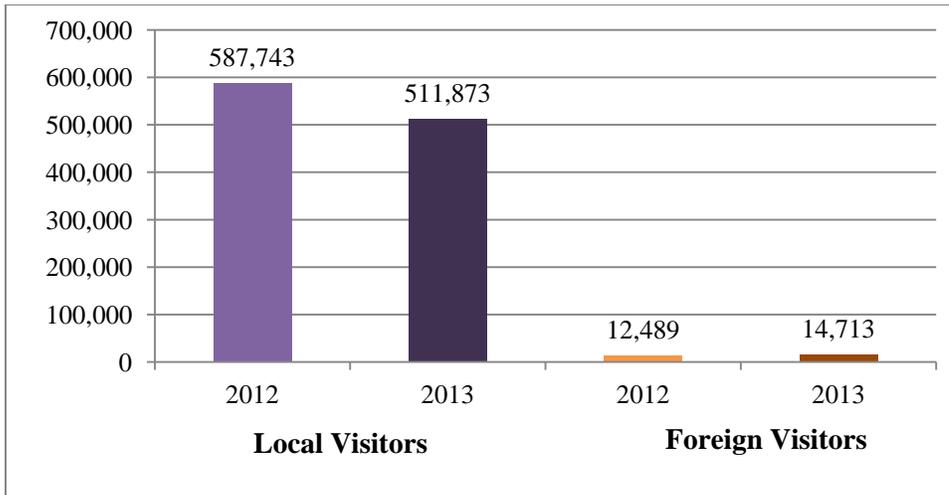


3.2. Hakgala Botanic Gardens, Hakgala

3.2.1. Hakgala Botanic Gardens Attendance: Distribution of visitor categories -2013



3.2.2. Hakgala Botanic Gardens Attendance: Visitor Numbers (Comparison with last year)

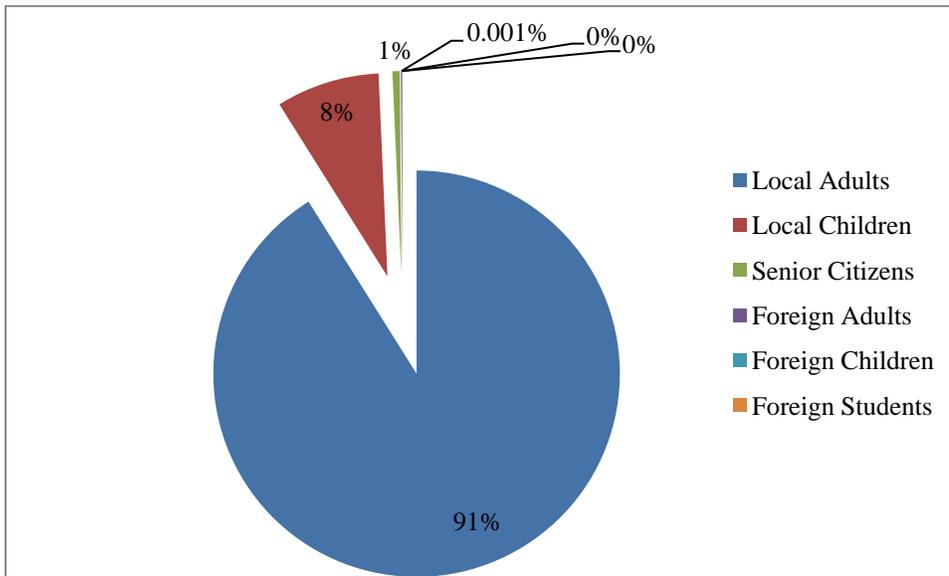


3.2.3. Hakgala Botanic Gardens Vehicle Access

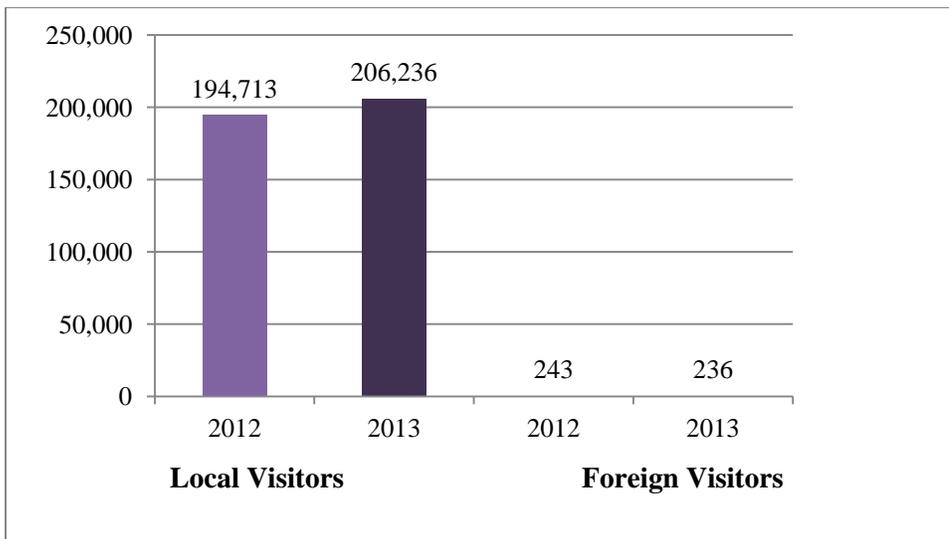
Entering vehicles to the garden was restricted from month of June 2013 considering on reducing emissions within the gardens, protection of plants, and annual increments of visitors. Only service vehicles and official vehicles are permitted. During this year till June 2,471 numbers of Motor cars, 492 numbers of Motorbikes and 06 Foot bikes were entered to the garden.

3.3 . Henarathgoda Botanic Gardens, Gampaha

3.3.1. Henarathgoda Botanic Gardens Attendance: Distribution of visitor categories -2013



3.3.2. Henarathgoda Botanic Gardens Attendance: Visitor Numbers (Comparison with last year)

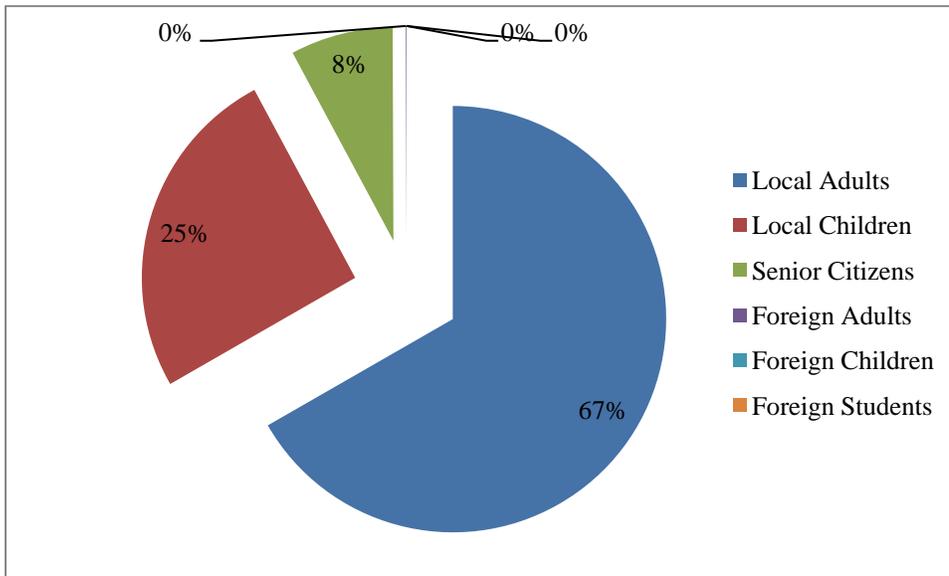


3.3.3. Henarathgoda Botanic Gardens Vehicle Access

Visitors to the garden were entered via 13,612 Motor cars, 14,957 Motorbikes and 71 Bicycles during the year 2013 and enjoy their visit at the garden.

3.4. Mirijjawila Dry Zone Botanic Gardens, Hambantota

3.4.1. Mirijjawila Dry Zone Botanic Gardens Attendance: Distribution of visitor categories -2013



10,750 numbers of people visit the garden after its opening to the public on 15th November 2013.

3.5. Ganewatta Medicinal plant Garden

3.5.1. Ganewatta Medicinal plant Garden Attendance: Visitors

1,058 People visited the garden to obtain information on medicinal plants, to learn conservation and utilization of medicinal plants as well as people visited the garden to buy plants and medicine for their necessities. The majority of the people who visited were Ayurvedic physician or students of Ayurveda Colleges.

Appendix 2: Financial details

1. Public Officers Advance Account details

Item No: 32201

	Maximum Limit of Expenditure (Rs.)	Minimum Limit of Receipts (Rs.)	Maximum Limit of Debit Balance (Rs.)
Budget estimate- 2013	17,000,000.00	8,000,000.00	66,000,000.00
Revised limits	-	-	-
Actual data	18,542,602.13	13,637,514.46	52,596,679.34

2. Expenditure

2.1. Capital Expenditure

Sub Project Object Code	Object Details	Net Provision 2013 Budget Rs.	Total Expenditure Rs.	Balance Provision Rs.	%
	Rehabilitation of Buildings & structures				
0 2001	Building and Structures	2,000,000.00	1,962,284.90	37,715.10	98.1%
0 2002	Plant, Machinery and Equipment	500,000.00	285,529.19	214,470.81	57.1%
0 2003	Vehicles	500,000.00	211,220.00	288,780.00	42.2%
	Acquisition of Capital Assets				
0 2101	Vehicles	10,000,000.00	4,440,956.22	5,559,043.78	44.4%
0 2102	Furniture and Office Equipment	550,000.00	508,790.00	41,210.00	92.5%
0 2103	Plant, Machinery and Equipment	400,000.00	390,075.00	9,925.00	97.5%
0 2104	Buildings and Structures	5,000,000.00	802,586.00	4,197,414.00	16.1%
0 2105	Land and Land Improvements	2,000,000.00	1,968,245.24	31,754.76	98.4%
	Capital Transfers				
0 2201	Botanic Gardens Trust Fund	115,000,000.00	86,335,273.76	28,664,726.24	75.1%
0 2401	Training and Capacity Building	200,000.00	179,974.00	20,026.00	90.0%

Sub Project	Object Code	Object Details	Net Provision 2013 Budget Rs.	Total Expenditure Rs.	Balance Provision Rs.	%
		Special Projects				
1	2105	Gampaha Botanic Gardens/ Ganewatte Medicinal Plant Garden Development	30,000,000.00	20,436,310.72	9,563,689.28	68.1%
2	2105	Floriculture Development Programme	39,000,000.00	37,181,530.97	1,818,469.03	95.3%
3	2105	Dry Zone Botanic Gardens, Hambantota	175,000,000.00	107,437,769.43	67,562,230.57	61.4%
4	2105	Avissawella Botanic Gardens	50,000,000.00	45,710,409.54	4,289,590.46	91.4%
6	2105	Floriculture Promotion Programme	5,000,000.00	3,744,652.84	1,255,347.16	74.9%
7	2105	Meegallawa Haritha Piyasa T.C.	5,000,000.00	4,015,681.38	984,318.62	80.3%
8	2105	Botanical Survey	1,000,000.00	174,470.50	825,529.50	17.4%
9	2105	Establishment of new botanical gardens in North	2,000,000.00	0.00	2,000,000.00	0.0%
10	2105	Floriculture Development and Exhibition activities including "Dayata Kirula"	5,000,000.00	4,984,890.54	15,109.46	99.7%
		Total	448,150,000.00	320,770,650.23	127,379,349.77	71.6%

2. 2. Recurrent Expenditure

Object Code	Object Detail	Net Provision 2013 Budget (Rs.)	Total Expenditure (Rs.)	Balance Provision (Rs.)	%
	Personal Emoluments				
1001	Salaries and Wages	110,000,000.00	97,406,021.04	12,593,978.96	88.6%
2002	Over Time and Holiday Pay	5,000,000.00	4,456,747.68	543,252.32	89.1%

Object Code	Object Detail	Net Provision 2013 Budget (Rs.)	Total Expenditure (Rs.)	Balance Provision (Rs.)	%
1003	Other Allowances	68,000,000.00	65,475,120.37	2,524,879.63	96.3%
	<u>Travelling Expenses</u>				
1101	Domestic	1,450,000.00	1,220,612.84	229,387.16	84.2%
1102	Foreign	50,000.00	0.00	50,000.00	0.0%
	<u>Supplies</u>				
1201	Stationary and Office Requisites	700,000.00	589,353.53	110,646.47	84.2%
1202	Fuel	3,250,000.00	2,959,644.10	290,355.90	91.1%
1203	Diets and Uniform	200,000.00	198,552.05	1,447.95	99.3%
1205	Other	3,200,000.00	3,133,450.16	66,549.84	97.9%
	<u>Maintenance Expenditure</u>				
1301	Vehicles	1,250,000.00	1,245,493.64	4,506.36	99.6%
1302	Plant Machinery & Equipment	500,000.00	498,566.48	1,433.52	99.7%
1303	Building & Structures	500,000.00	492,624.93	7,375.07	98.5%
	<u>Services</u>				
1401	Transport	750,000.00	723,759.00	26,241.00	96.5%
1402	Postal and Communication	1,500,000.00	1,171,025.53	328,974.47	78.1%
1403	Electricity and Water	4,000,000.00	2,978,126.22	1,021,873.78	74.5%
1404	Rents & Local Taxes	600,000.00	444,211.13	155,788.87	74.0%
1405	Other Services	24,900,000.00	24,256,731.37	643,268.63	97.4%
	<u>Transfers</u>				
1506	Property Loan Interest	1,100,000.00	1,041,850.42	58,149.58	94.7%
	Total	226,950,000.00	208,291,890.49	18,658,109.51	91.8%

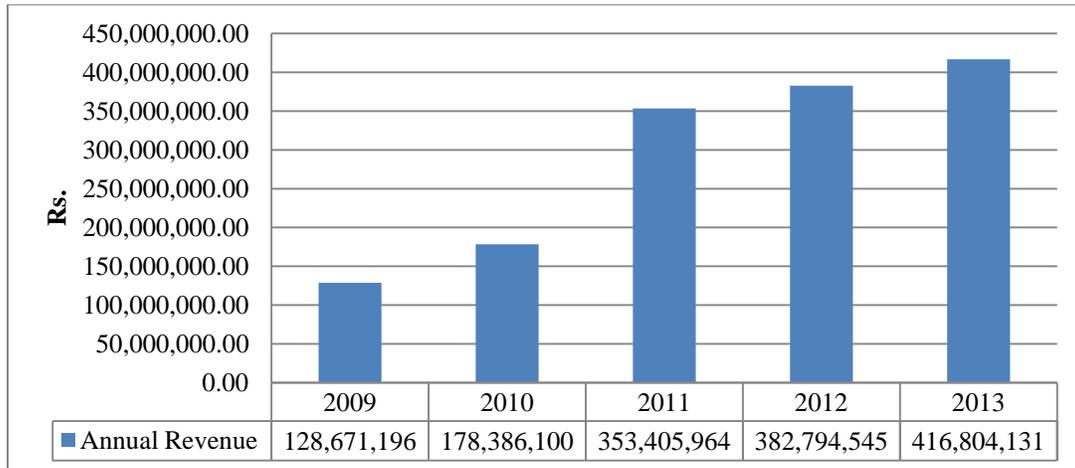
3. Revenue

3.1 Total revenue of the Department

The total revenue earned from admission fees, plant sales, and rents etc. is Rs. 416.8 Million. The revenue earned from visitors to the gardens is Rs.387.9 Mn. and the revenue earned from other sources (plant sales, Rents, etc.) is Rs.28.9 Mn.

Units	Total Income (Rs.)
Royal Botanic Gardens, Peradeniya	358,984,033.81
Botanic Gardens, Hakgala	40,059,395.50
Botanic Gardens, Gampaha	15,747,001.00
Medicinal Gardens, Ganewatta	588,221.00
Dry Zone Botanic Gardens, Hambantota	674,800.00
“Suwahas Mal Sevana” Plant Nursery, Battarmulla	83,760.00
Wet Zone Botanic Gardens, Avissawella	666,920.00
Grand Total	416,804,131.31

3.2. Annual revenue of the Department in last 5 years



3.3. Revenue of Royal Botanic Gardens, Peradeniya

Category	Revenue (Rs.)
Admission fees	342,025,775.00
Plant and other plant related sales	6,586,180.00
Sales of publications	352,025.00
Renting buildings and other bills	9,274,445.31
Filming and photography charges	280,640.00
Circuit bungalow reservations	239,320.00
Other revenue (woods selling, regi. of suppliers, etc.)	115,648.50
Training	110,000.00
Total	358,984,033.81

3.4. Revenue of Hakgala Botanic Garden

Category	Revenue (Rs.)
Admission fees	35,643,340.00
Vehicle Entrance fees	407,700.00
Plant Sales and other related sales	3,529,604.00
Sales of publications	6,970.00
Circuit bungalow reservations	351,498.00
Filming and photography	56,000
Other revenue (woods selling, regi. of suppliers, etc..)	64,283.50
Total	40,059,395.5

3.5. Revenue of Henerathgoda Botanic Garden, Gampaha

Category	Revenue (Rs.)
Admission fees	9,835,320.00
Vehicle Entrance fees	3,418,100.00
Plant Sales and other related sales	691,890.00
Sales of publications	64,316.00
Ground renting	663,500.00
Filming and photography	423,380.00
Boat riding	606,400.00
Other revenue (woods selling, regi. of suppliers, etc..)	44,095.00
Total	15,747,001.00

3.6. Revenue of Medicinal Plant Garden, Ganewatta

Category	Revenue (Rs.)
Plant Sales and other related sales	505,120.00
Coconut sales	54,456.00
Other revenue (woods selling, regi. of suppliers, etc..)	28,645.00
Total	588,221.00

3.7. Revenue of Mirijjawila Dry Zone Botanic Garden, Hambantota

Category	Revenue (Rs.)
Admission fees	400,840.00
Plant Sales and other related sales	99,650.00
Dormitory reservations	57,010.00
Filming	80,000.00
Other revenue (woods selling, regi. of suppliers, etc..)	37,300.00
Total	674,800.00

3.8. Revenue of Illukowita Wet Zone Botanic Garden, Avissawella

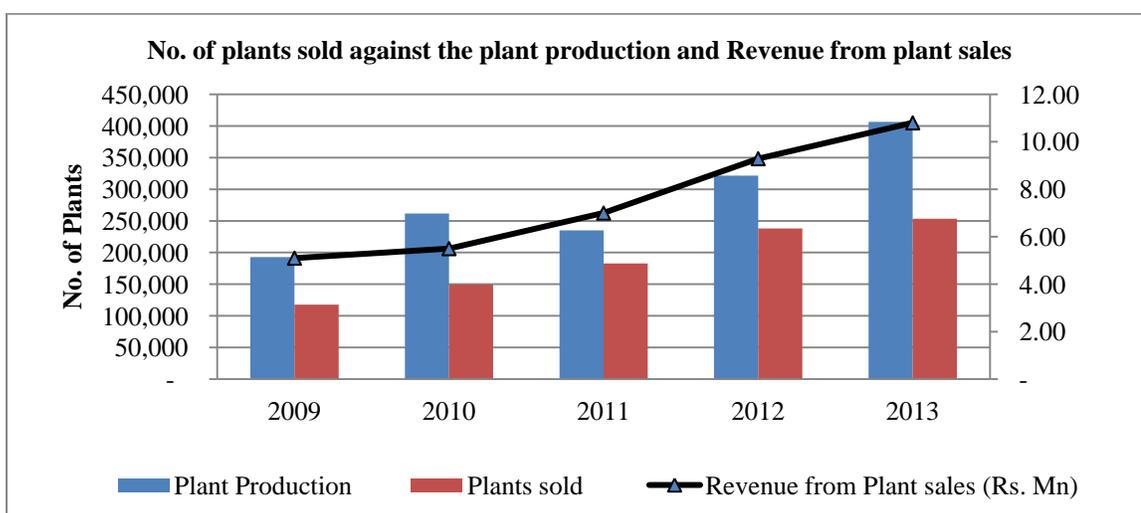
Category	Revenue (Rs.)
Tea state renting	664,000.00
Other revenue (woods selling, regi. of suppliers, etc..)	2,920.00
Total	666,920

3.9. Revenue of “Suwahas Mal Sevena” plant nursery

Category	Revenue (Rs.)
Plant Sales and other related sales	10,050.00
Sales of publications	2,435.00
Other revenue (woods selling, regi. of suppliers, etc..)	71,275.00
Total	83,760.00

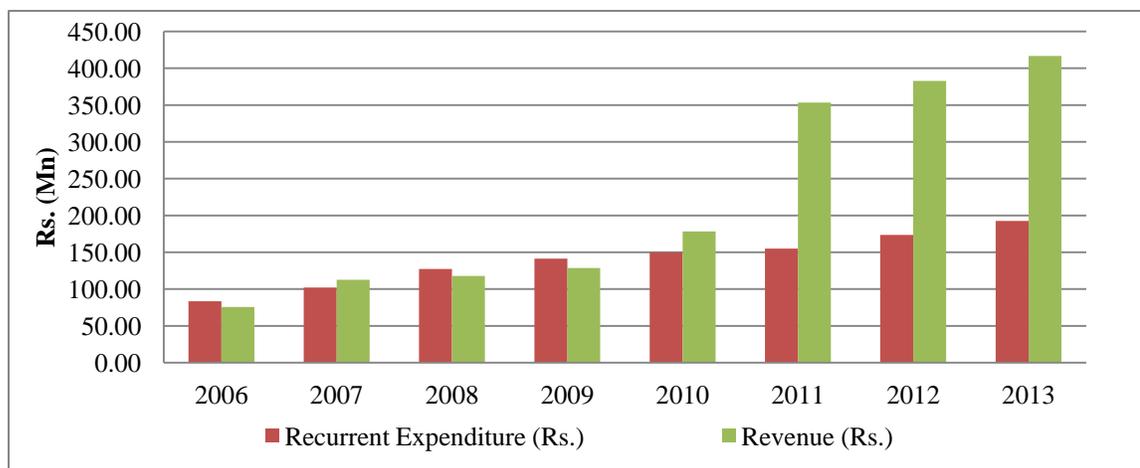
3.10. Revenue from plant sales

The graph below shows the annual plant production, plants sold and revenue earned from plant sales at all the botanic gardens under the department. As shown in the graph there is an increase in plant production, plant sales and in revenue earned from plant sales.



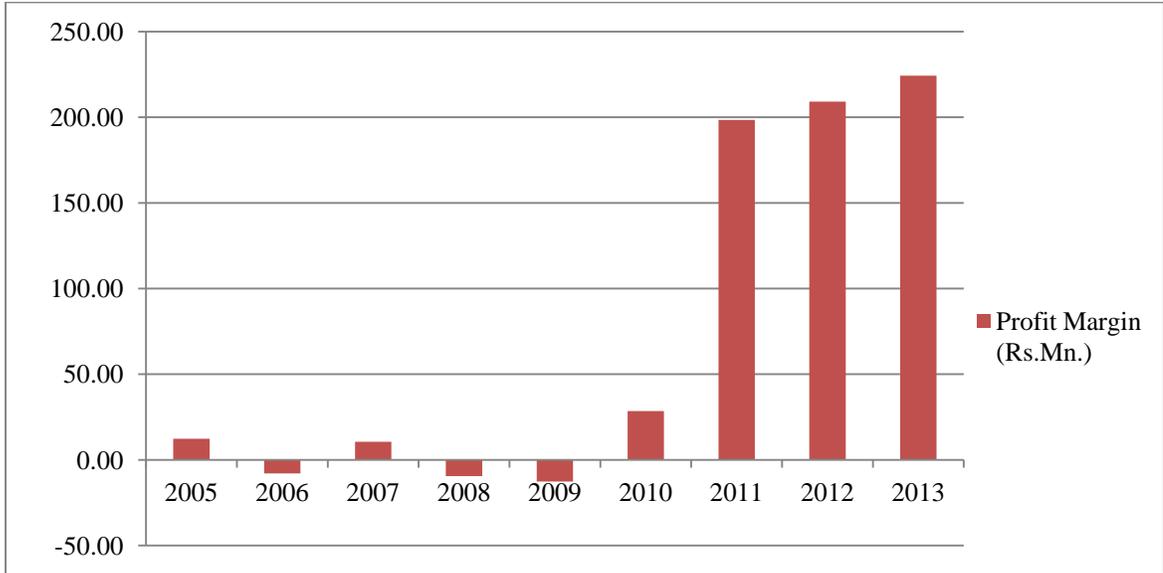
3.11. Recurrent Expenditure vs. Revenue

As shown in the graph below, total revenue of the department increased annually from 2010 and there is a boost in 2011 due to price change in tickets. It shows that the revenue earned exceeds the recurrent expenditure.



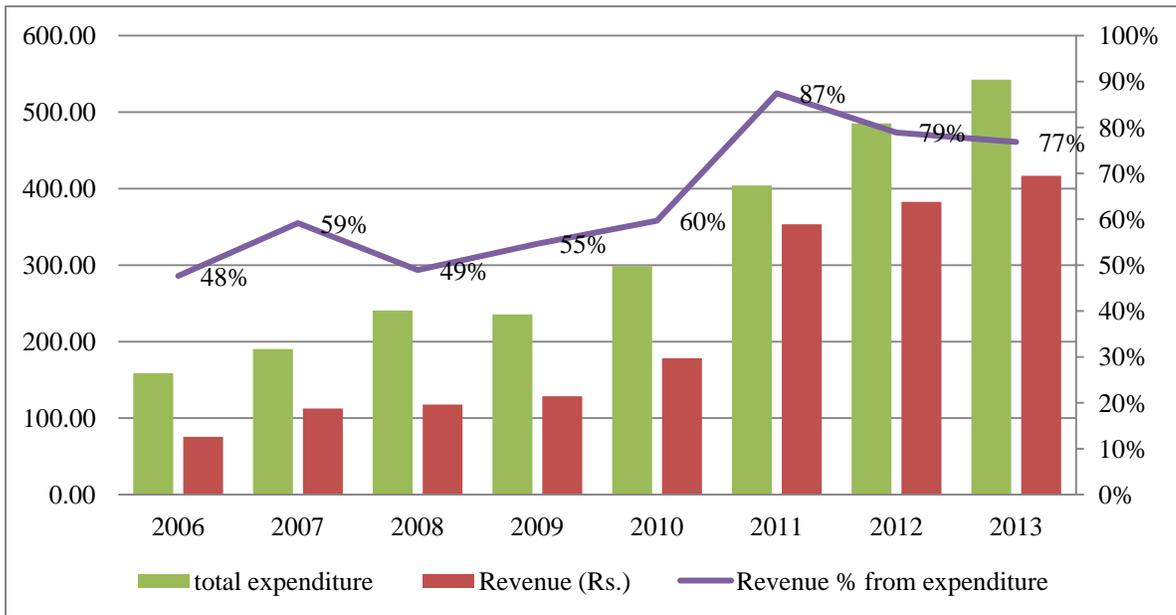
3.12. Profit margin of the department (excluding capital expenses) -2005 to 2013

The graph mentioned below shows the profit margin (total revenue- total recurrent expenditure) of the department from year 2005 excluding capital expenditure. As shown in the graph there is an increase in profit margin since 2010 and boot from 2011.



3.13. Revenue Percentage (%) compared to the total expenditure (Recurrent + Capital)

The graph mentioned below shows the % of total revenue earned by the department when compared to the total expenditure. It shows the department earned 77% of the total Expenditure in 2013.



Appendix 3: Staff Details

Approved employee cadre of the Department is 720 and out of 720 approved cadre, 661 is already employed at the Department .Out of 661 existing cadre, 545 are permanent and includes 21 staff grade officers, 34 officers of Sri Lanka Technical Service, 3 Graduate Agriculture Monitoring Officers, 22 Graduate Program Assistants and 42 officers of Management Service and 105 gardeners/labourers on contract basis. 11 are transferred from Smaurdhi Authority to the Department of National Botanic Gardens pursuant to a cabinet decision in 2007.

1. Employee Profile of the Department

Category	Approved Cadre	Actual Cadre
Senior Level	33	16
Tertiary Level	6	5
Secondary Level	165	96
Primary Level	516	412
Transferred from Samurdhi Authority	-	11
Contract Labour	-	105
Total	720	645

2. Senior Staff of the Department

Designation	Name of the Officer
Director General	Dr. D.S.A. Wijesundara
Director (Development)	Dr. D.H.P. Peramunugama
Director (Research and Technology Transfer)	Mr. K.N. Yapa
Director (Administration)	Mrs. I.W.M.C.K. Illangakoon
Chief Accountant	Mr. E.L. Jayawardena
Civil Engineer (Consultant)	Mr. G.K.R. Waththaladeniya
Internal Auditor	Mr. W. T. U. de Mel

3. Other staff of the head office of the Department

Designation	Name of the Officer
Deputy Director (Finance)	Mrs. N.T. Liyanage
Administration Officer	Mr. N.W.U.R. Jayalath

In addition to the above staff a progress monitoring and evaluation officer, 18 Management Assistants, 02 Drivers, 4 Assistants for Office work and 03 Permanent Labourers are working at the Head office of the Department.

4. Staff details at Royal Botanic Gardens, Peradeniya as of 31st December 2013

Officers Name	Post	Qualifications	Discipline
Dr. (Mrs.) A.M.A.S. Attanayake	Deputy Director	B.Sc. (Special), M.Sc., Ph.D.	Plant Science & Plant Systematics
Mr. P. D. S. Wijeratne	Curator	B.Sc.	Agriculture
Mr. P.K. Mahantheagama	Principal	B.Sc.	Agriculture
Mr. A.G. Sunil	Programme Assistant	B.Sc., M. phill	Plant Science
Mrs. N. A. S. J. Senevirathne	Programme Assistant	B.Sc., M.Sc.	Biology & Environment Science
Mr. P. R. C. Rathnayake	Agricultural Instructor	Diploma In Agriculture	Landscaping
Mr. H. R. S. M. Herath	Agricultural Instructor	Diploma In Agriculture	Nursery Management and plant production
Mr. S. S. M. Samarakoon	Garden Assistant	Landscape Gardening	Tree care and maintenance
Mr. D. M. S. Dhanasekara	Garden Assistant	Landscape Gardening	Maintenance of Services
Mr. T. R. B. Weerakoon	Garden Assistant	Landscape Gardening	Landscaping
Mr. T. Premasiri	Garden Assistant	Landscape Gardening	Labour distribution and supervision
Mr. A. G. Thilakarathna	Garden Assistant	Landscape Gardening	Supervision of security services
Mr. A. G. Abesinghe	Garden Assistant	Landscape Gardening	Landscaping

In addition to the above staff mentioned in the table, 05 Management Assistants, 01 Bungalow keepers, 03 garden supervisors, 01 lab assistant, 06 Assist. Charge collector, 01 Driver, 01 budder, 02 Label writers, 06 Lawn mower operators, 01 Store man, 16 Watchers , 01 Nurserymen ,02Tractor Operators, 01Carpenter, 02 Masons, 01 Welder, 01 Blacksmith, 02 Tree Cutters, 01 Tree Feller, 01Lorry cleaner, 02 Budders, 89 Permanent Labourers and 01 Contract Labourers are providing their services to the garden.

5. Staff details at National Herbarium as of 31st December 2013

Name	Designation	Qualification	Discipline
Mrs. R. A. S.W. Ranasinghe (overseas on study leave)	Deputy Director (Actg.)	B.Sc.(Botany), M.Sc.	Plant Taxonomy and Systematics of Higher plants and Management of the unit
Mrs. N.P.T. Gunawardena	Agriculture Monitoring Officer	B.Sc.(Botany), M. Sc	Taxonomy of Bryophytes
Mrs. G. Fonseka	Programme Assistant	B.Sc. (Botany), M. Sc	Plant Taxonomy and Systematics of higher plant

In addition to the above staff mentioned in the table, 01 Management Assistant and 03 permanent labourers are providing their services to the unit.

6. Staff details at Floriculture Research and Development Unit as of 31st December 2013

6.1. Attached to the Peradeniya Botanic Gardens

Name	Designation	Qualification	Field
Dr. (Ms.) Shelomi A. Krishnarajah	DD (Floriculture Research)	B.Sc. (Botany), M.Sc., Ph.D.	Bio Technology and management of the Unit
Mr. A. Yogarajah	Research Assistant	Diploma In Agriculture	Micro-propagation
Ms. R. M. Kamala Menike	Agriculture Instructor	Diploma In Agriculture	Anthurium culture
Mr. U. B. Palipane	Agricultural Monitoring Officer	B.Sc.	Water Plant and Gerbera culture, Floriculture extension in Kandy region
Ms. K. A. C. N. Seneviratne	Agricultural Monitoring Officer	B.Sc., M. Sc	Post Harvest Handling
Mr. M. M. K. P. Walikumbure	Agriculture Instructor	Diploma In Agriculture	Foliage plants
Ms. W. M. D. E. R. Andradhi	Agriculture Instructor	Diploma In Agriculture	Orchid culture
Ms. I. H. C. N. Samanthika	Agriculture Instructor	Diploma In Agriculture	Overseas on no pay leave
Dr. (Ms.) H. M. R. Herath	Programme Assistant	B.Sc., M. Sc, PhD	Micro Propagation
Ms. M. K. Rubesinghe	Programme Assistant	B.Sc., M. Sc	Plant Breeding
Mr. R. A. S. Perera	Programme Assistant	B.Sc., M. Sc	Floriculture extension- Matale region
Ms. A. N. Abeykoon	Programme Assistant	B.Sc., M. Sc	Plant pathology
Ms. L. A. P. Perera	Programme Assistant	B.Sc., M. Sc	Agronomy, Post Harvest Handling
Ms. M. Uthpalewarna	Programme Assistant	B.Sc.	Floriculture extension – Kegalle region
Ms. K. A. S. Thilakaratne	Programme Assistant	B.Sc.	Floriculture extension – Kegalle region

In addition to the above mentioned staff 2 translators, a Chief Management Assistant and 3 labourers are serving the unit.

6.2 Attached to the Floriculture Research and Extension Unit at Gampaha Botanic Gardens

Officers Name	Post	Qualifications	Discipline
Ms. M. C. Wickramasinghe	Research Officer	B.Sc., M. Sc	Agronomy of floriculture crops
Ms. Anoma Bowatha	Research Assistant	Diploma In Agriculture	Plant production
Ms. M. A. N. Jayawardana	Agriculture Instructor	Diploma In Agriculture	Floriculture extension in Gampaha District

Officers Name	Post	Qualifications	Discipline
Mr. D. V. R. A. Perera	Agriculture Instructor	Diploma In Agriculture	Floriculture extension in Gampaha District
Ms. A. P. Siriwardena	Programme Assistant	B.Sc., M. Sc.	Floriculture extension in Gampaha District/ cultivation & Micro propagation of Anthuriums
Ms. A. N. Nanayakkare	Programme Assistant	B.Sc., M.Sc.	Floriculture extension in Gampaha District / cultivation & Micro propagation of Orchids
Ms. B.U.G. Ranasinghe	Programme Assistant	B.Sc.	overseas on no-pay leave
Mr. R. A. M. I. Ratnayake	Programme Assistant	B.Sc.	Tissue culture, Water plant & Gerbera collection
S. A. A. U. Subasingha	Programme Assistant	B.Sc., M. Sc	Floriculture extension in Gampaha District
K. L. K. Dharmadasa	Programme Assistant	B.Sc., M. Sc	Floriculture extension in Gampaha District
Ms. Nimali Perera	Programme Assistant	B.Sc.	Floriculture extension in Kurunagala District

7. Staff details at Suwas Mal Sevana Unit, Narahenpita as of 31st December 2013

Officers Name	Post	Qualifications	Discipline
Mrs. R.S.W. Gomes	Assistant Director	B.Sc.	Officer in charge

In addition to the above staff mentioned in the table, 11 officers transferred from Samurdhi Authority to the Department of National Botanic Gardens are providing their services to the unit.

8. Staff details at Hakgala Botanic Gardens as of 31st December 2013

Officers Name	Post	Qualifications	Discipline
Mr. M.M.D.J. Senarathna	Curator	B.Sc. (Botany), M.Sc. (Forestry)	Plant Science
Mr. R.G.S.P. Piayasena	Programme Assistant	B.Sc.	Floriculture
Mr. A. B. Maddegoda	Garden Assistant	Landscape Gardening	Landscape Gardening

In addition to the above staff mentioned in the table, 04 Management Assistants, 02 Bungalow keepers, 01 garden supervisor, 01 lab assistant, 01 Assist. Charge collector, 01 Driver, 01 budder, 01 Label writer, 02 Lawn mower operators, 01 Store man, 01 Watcher, 01 Nurseryman, 45 permanent labourers and 01 contract labourers are providing their services to the garden

9. Staff details at Gampaha Botanic Gardens as of 31st December 2013

Officers Name	Post	Qualifications	Discipline
Mrs. Chandrika Jayaweera	Curator	B.Sc.(sp) Agric., M.Sc.(Horti.)	Plant Science
Mrs. J. K. A. Tamara Kumari	Agriculture Instructor	NDT (Agriculture)	Nursery management and Plant production
Mrs. M. D. D. S. Mahayagoda	Agriculture Instructor	NDT (Agriculture)	Landscaping, Arboriculture
Mrs. A.A.T. Malani	Agriculture Instructor	1 Yr. Practical course in Agriculture	Landscaping, Arboriculture
MRs. S. D. Ramyakanthi	Agriculture Instructor	1 Yr. Practical course in Agriculture	Education and Training.
Mrs. R.M.T. Lakmali	Programming Assistant	BA (sp) (Mass Communication)	Progress monitoring

In addition to the above staff mentioned in the table, 05 Management Assistants, 01 Assist. Charge Collector, 01 Driver, 01 Office Assistant, 01 Tractor Operator, 01 Budder, 01 Lawn Mower Operators, 02 Nurserymen, 01 Tree fellers, 34 Permanent labourers and 03 Contract labourers are providing their services to the garden.

10. Staff details at Medicinal Plant Gardens as of 31st December 2013

Officers Name	Post	Qualifications	Discipline
Mrs. E.P. S. Illangaratne	Agriculture instructor	Diploma in Agriculture	Unit management
Mr. A. Thalgodapitiya	Agri supervisor	Diploma in Agriculture	Plant production

In addition to the above staff mentioned in the table, 01 store man, 7 permanent labourers and 03 contract labourers are providing their services to the garden.

11. Staff details at Mirijjawila Dry Zone Botanic Gardens as of 31st December 2013

Officers Name	Post	Qualifications	Discipline
Mr. E.M.S. Ekanayake	Officer in charge	B.Sc.	Unit management
Mrs. Maduri Peris	Head of the Floriculture Unit	B.Sc.	Floriculture extension and development
Mr. M.G.S. Kumara	Programme Assistant	B.Sc.	Tree care and Maintenance and medicinal plants

In addition to the above staff mentioned in the table, 3 management assistants, 3 drivers, 27 permanent labourers and 28 contract labourers are providing their services to the garden.

12. Staff details of Illukowita Wet Zone Botanic Gardens as of 31st December 2013

Officers Name	Post	Qualifications	Discipline
Mr. R. D. D. Kularathna	Officer in charge	B.Sc.	Unit management
Mr. S. S. Otknapitiya	Agriculture Instructor	Diploma in Agriculture	Landscape and gardening

In addition to the above staff mentioned in the table, 5 permanent labourers and 4 contract labourers are providing their services to the garden.

13. Staff details of Meegalawa Haritha Piyasa Training Centre as of 31st December 2013

Officers Name	Post	Qualifications	Discipline
Mr. .S.C.D. Wijsekara	Officer in charge	B.Sc.	Unit management

14. Staff details of Residential Gardens of H.E. the President and Hon. Prime Minister during 2013

Name	Designation	Place of work	Qualification	Field
Mr. D.B.R.A. Perera	Garden Keeper	President's House Gardens, Colombo 01	Diploma in Agriculture	Garden Management, Landscaping and Horticulture
Mr. R.G. Jayasekara	Garden Keeper	President's House Gardens, Kandy	Diploma in Agriculture	Garden Management, Landscaping and Horticulture
Mr. A.D. Kulasinghe	Garden Keeper	President's House Gardens, Nuwara Eliya	Diploma in Agriculture	Garden Management, Landscaping and Horticulture
Mr. Monoj Dissanayake	Garden Keeper	President's House Gardens, Anuradhapura	Diploma in Agriculture	Garden Management, Landscaping and Horticulture
Mr. H.A.R.R. Ranasinghe	Garden Keeper	Temple Tree Gardens, Colombo 03	Diploma in Agriculture	Garden Management, Landscaping and Horticulture
Mr. M.B.R. Perera	Garden Keeper	Prime Minister's Office, Colombo 07	Diploma in Agriculture	Garden Management, Landscaping and Horticulture
Mr. R.M. Jayasundara	Garden Keeper	Prime Minister's Lodge, Nuwara Eliya	Diploma in Agriculture	Garden Management, Landscaping and Horticulture

In addition the staffs mentioned in the table above there are 70 permanent and 37 contract labourers providing their services to gardens.

15. Staff attached to the Commonwealth war cemeteries during 2013

Name	Designation	Place of work	Qualification	Field
Mr. M.G.S. Salgado	Officer in Charge	Garden Assistant Office, Narahenpita	Diploma in Agriculture	Landscaping and Horticulture

In addition the staff motioned staffs in the table above there are 16 permanent and 05 contract labourers providing their services to gardens.

Appendix 4: Staff Transfers, Retirements, Promotions

1. Head office, Peradeniya

1.1. Transfers

1. Mrs. N.T. Liyanage , assumed duties at the department on 16th April 2013 as the Deputy Director (Finance) to fill the vacancy occurred after the retirement of the officer in position.
2. Mrs. W.H. Anuruddhika, Management Assistant assumed duties at the Accounts division, Head office on 1st of January 2013 under the annual transfers.
3. Ms. N.M.K Samaratunga, Management Assistant obtained a transfer from Madulla Divisional secretariat and assumes duties at the Administration division, Head office on 3rd of June 2013 as a replacement for Mrs. W.M. G. Thilakarathna who left the department on 23rd May 2013.
4. Ms. W.P.L. Jayawardena, Management Assistant left the department on 31st December 2013 as an annual transfer.

1.2. Retirements

1. Mr. G.R. Jayasundara Banda, Deputy Director (Finance) retired from his position on 15th March 2013.
2. Mr. H.M.N. Ratnayaka , Management assistant retired on 05th May 2013.

1.3. Deaths

1. Mr. V.A. Bandara, Engineer expired accidentally on 07th October 2013.

1.4. Recruitments

1. Mr. G.K. R. Wattaladeniya was recruited as consultant in engineering on 19.11.2013 to the department.

2. Royal Botanic Gardens, Peradeniya

2.1 Transfers

1. Mrs. Manjula Piyasena Management Assistant transferred from Royal Botanic Gardens, Peradeniya to Department of Agriculture Head office, Peradeniya on 1st of January 2013 under the annual transfers.
2. Mr. R. P. G. Rupasinghe, Management Assistant transferred from Technical college of Pathadumbara, Nawayalathanna, Katugastota to Royal Botanic Gardens Peradeniya on 07th of January 2013.
3. Mrs. Srimathee Madawala, Management Assistant was transferred from Education and training centre to Royal Botanic Gardens Peradeniya on 1st November 2013 considering working priorities.

4. Mrs. C. Wikramasinghe, Management Assistant was transferred from Royal Botanic gardens Peradeniya to Education and training centre on 1st November 2013.
5. Mr. A.G. Abesinghe Garden Assistant obtained a transfer from Medicinal Garden of Ganewattha to Royal Botanic Gardens Peradeniya and assumed duties on 7th November 2013.

2.2. Retirements

1. Mr. A. G. Wijerathne and Mrs. A.G. Hemalatha, Labourers retired on 17th January 2013, 03rd May 2013 respectively.
2. Mrs. T.P.G. Karunawathi Assistant charge collector retired on 14th of March 2013.
3. Mr. G. G. Wimalarathne and Mr. Sunil Macson, Watchers retired on 22nd May 2013 and 14th October 2013 respectively.
4. Mrs. J. L. Kusumalatha, Chief Management Assistant retired on 6th of November 2013.

3. Floriculture Research and Development Unit

3.1. Transfers

1. Ms. A. N. Abeykoon and Ms. L. A. P. Perera obtained a transfer to the Department of Agriculture and left the Department.
2. Government translators Ms. D. G. Walisinghe (Sinhala – English) and Mr. M. Tharik Ali (English – Tamil) assumed duties at this unit.

3.2. Promotions

1. Ms. M. K. Rubesinghe, Ms. K. A. S. Thilakawardhana and Ms. A. P. Siriwardhana obtained a promotion as Agricultural Officer after getting through the Agricultural Service Examination and left the department and join the Department of Agriculture.

4. National Herbarium

1. Mrs. Subhani Ranasinghe, Research Officer/Deputy Director obtained a full scholarship for her Ph.D. studies from Edinburg University and left the unit on 01.09.2013 for 4 year.
2. Dr. (Mrs.) Achala Attanayake took over Mrs. Subhani Ranasinghe' s duties at National Herbarium from 01/09/2013.
3. Ms. L.R.G Anoma K. Rathnayaka, an Office assistant assumed duties as new appointment at the unit.
4. Mr. W. A.C. Gunarathna, a Driver assumed duties at the Department as a transfer and started working for the unit.

5. Hakgala Botanic Gardens

5.1. Retirements

1. Mr. M. B. M. Aberathna Bandara , Garden Supervisor retired on 04th October 2013
2. Mr. G.A. Mithreepala, Labourer retired on 30th January 2013.
3. Mrs. H.M. Premawathie, Mrs. S. Siwapakkiyam, Mrs. T. Wellamma , Labourers retired on 30.06.2013

5.2. Deaths

1. Mr. R. Nandakumar , Labourer died on 18.02.2013

6. Gampaha Botanic Gardens

6.1 Transfers

1. Ms. H.P.D.S. Jayasekara and Mr. K.D.D.S. Jayasekara , Management Assistants assumed duties at the garden on 19th January and 19th February 2013 respectively as an annual transfers.
2. Ms. R.M.R.D. Rathnayake, Management Assistant left the garden as an annual transfer on 31st December 2013.
3. Mr. D.B.R.A. Perera, Agricultural Instructor was transferred to the Presidential house, Colombo as the Officer in charge on 27th October 2013 as an internal transfer of the department.

6.2 Retirements

1. Ms. L.S. H.B. de Silva and Ms. P.S. Dadigama, Management Assistants retired on 19th February and 01st March 2013 respectively.
2. Ms. A.A. Thilaka Malani and Ms. S.D. Ramyakanthi, Agricultural Instructors retired on 11th February and 10th March 2013 respectively.
3. Ms. M.P.P. Malika, Labourer retired on 19th May 2013.
4. Mr. H.D.S. Ranaweera, Lawn mower operator retired on 19th September 2013 after 36 year service at the garden.

7. Ganewatta Medicinal Plant Gardens

1. Mr. D.M. Gunarathna and Ms. R.M. Dayawathee, Laborers retired on 16th and 23rd April, 2013 respectively.
2. Mr. A. B. Thalgodapitiya, Agri. Supervisor assumed duties at the garden after obtained from President House Garden, Colombo 01 as an internal transfer, on 27th October 2013.

8. Meegallawa “Haritha Piyasa” Training Centre

1. Mr. .S.C.D. Wijsekera assumed duties at the centre as Officer in charge since 20.05.2013

Appendix 5: Trainings and Capacity Building of Staff

	Description	Training Institution	Country	Staff trained
1	7 day special training on conservation and preservation of archival materials, book binding, microfilming, scanning etc	Department of National Archives, Colombo	Sri Lanka	Agriculture Monitoring Officer and Labor (Grade 3) of National Herbarium
2	Housekeeping , food and beverages	Sri Lanka Tourism Hotel Training School, Kandy	Sri Lanka	02 Circuit Bungalow keepers and 04 labourers
3	Disciplinary procedures	National corporative development institute, Polgolla	Sri Lanka	02 curators, 02 Management assistants, 02 Agriculture instructors
		Skill Development Fund	Sri Lanka	Deputy director, Principal, Assistant director, 03 Officer in charges
4	Office Management and Procedures	Skill Development Fund	Sri Lanka	01 Management Assistant
5	Practical Aspects of Bid Evaluation	Skill Development Fund	Sri Lanka	Assistant director, Principal, Curator
6	Archival Management Training	Prague Services (Pvt.) Limited	Sri Lanka	01 office labourer
7	Training for newly recruited Management Assistants	Public Service training Institute	Sri Lanka	04 Management Assistant
8	Workshop on building right attitudes	Skill Development Fund	Sri Lanka	110 labourers

- A one day workshop was conducted for 129 workers attached to different unit at the Department on attitudinal development by Education and Training Centre.
- A field day was organized with the participation of all officers of this unit that included the cut flowers production facilities at the Hakgala BG, and inspections/ visits to 02 Nurseries each of members of the Dambawinna and Bandarawela “Suwahas Mal” societies.

Appendix 6: Research Publications

1. Lamahewa, H. M. P., **H. M. I. Herath** and D. L. C. K. Fonseka (2013); Effect of media additives on micopropagation of Gerbera (*Gerbera jamesonii* var. Kilmanjaro); Tenth Academic Sessions, University of Ruhuna. Pp. 84-85.
2. Sumanasiria H., **Krishnarajah S.A**, Eeswaraa J. P. 2013 Effect of gibberellic acid on growth and flowering of *Henckelia humboldtianus* Gardner (Ceylon Rock Primrose) Scientia Horticulturae 159 : 29–32
3. Herath H.E., **S. A. Krishnarajah** and J. W. Dumunupola (2013), Effect of two plant growth hormones and potting media on an ornamental foliage plant *Ophiopogon* sp. Int. Res. J. Biological Sci., 2(12), 11-17.
4. Perera W. P. N. N., S. E. Peiris, **R. A. S. Perera**, K.O.Gaminia and J. S. Peramuna (2013); Identification of nutrient imbalance to overcome tip burn in *Dracaena sanderiana* L. Presented at the National Symposium on Floriculture Research and accepted for publication.
5. Dias S. N. K. M., B. C. N. Peiris, S. E. Peiris and **R. A. S. Perera** (2013); Investigation of a suitable method to produce “Spiral Lucky Bamboo” using *Dracaena sanderiana* Var. “Gold” by manipulating physical applications. Presented at the National Symposium on Floriculture Research and accepted for publication.
6. M. S. H. Pandithege, S. E. Peiris and **S. A. Krishnarajah** (2013); Investigation of the effect of gibberellic acid concentration and media composition on increasing the leaf length of Chinese grass (leaf length of Chinese grass L.) Presented at the National Symposium on Floriculture Research and accepted for publication.
7. **K. A. C. N. Seneviratna**, W.A.M. Daundasekera, S.A. Kulasoorya and **D.S.A. Wijesundara** (2013); Development of Rapid Propagation Methods and a Miniature Plant for Export-oriented Foliage, *Zamioculcas zamifolia*; Ceylon Journal of Science (Bio. Sci.) 42(1): 55-62.
8. S. Vijayakumar, B. C. N. Perera, S. E. Peiris, **K. A. C. N. Seneviratna** and **S.A. Krishnarajah** (2013); Effect of some selected wash solutions and packaging materials on improving the shelf life of *Cordyline fruticosa* Var. ‘Green Ti’ cut foliage. Presented at the National Symposium on Floriculture Research and accepted for publication.
9. K.S.P. Amarathunga S.E. Peris, and **S.A. Krishnarajah** (2013); Selection of the best drying methods and suitable drying periods for Hibiscus, Zinnia, Wild Sun Flower and Gerbera flowers. Presented at the National Symposium on Floriculture Research and accepted for publication.
10. K.L.K. Dharmadasa and **M. C. Wickramasingha** (2013); Integrated Pest Management of *Gerbera jamesonii* cultivars under plant house conditions in Gampaha. Presented at the National Symposium on Floriculture Research and accepted for publication.
11. K.L.K. Dharmadasa and **M. C. Wickramasingha** (2013); New Record of Occasional Pest Symphytan (Arthropoda: Myriopoda: Symphyla) in Orchid cultivations in Meerigama Sri Lanka. Presented at the National Symposium on Floriculture Research as a poster.

12. Weerasinghe Aruna, Shanmugam Puvendram, Anura Wickramasinghe, D. Needra Karunaratne, **Siril Wijesundara** and Veranja Karunaratne. 2013. Potent bioactivities of the endemic Annonaceae heighten its dire conservation status. Journal of national Science Foundation of Sri Lanka. 41 (4): 345-351.
13. **Ekanayake E.M.S., D.S.A. Wijesundara** and G.A.D. Perera. 2013. Floristic Richness and Conservation Value of Tropical Montane Cloud Forest of Dothalugala Man and Biosphere Reserve, Sri Lanka. Ceylon Journal of Science (Bio. Sci.) 42 (2): 55-70

Appendix 7: Upgraded Library Facilities

Scientific Books were purchased newly and added to the library collection for improvement of reference in the library.

1. Eddy, A. (1988). A Hand book of Malesian Mosses. British Museum (Natural History Museum), London: Vol.1-2