2010

Annual Performance Report

Department of National Botanic Gardens

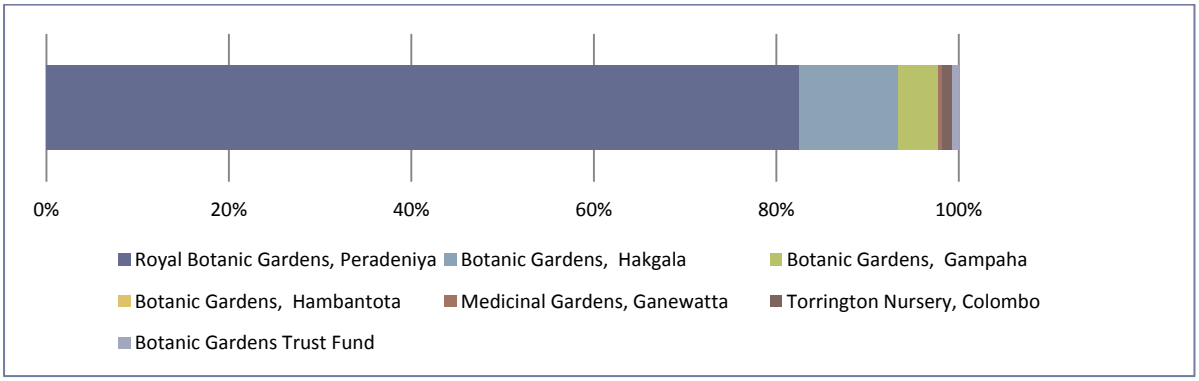
P.O.Box 14, Peradeniya

CONTENT

PERFORMANCE SNAPSHOT

REVENUE 2010

Rs. 179,650,020.48



VISITOR INFORMATION

Unit	2009		2010	
	Foreign	Local	Foreign	Local
Peradeniya	117,427	997,997	200,468	1,089,282
Hakgala	5,871	508,913	10,287	458,696
Gampaha	127	197,443	194	153,431
Total	**123,425**	**1,704,353**	**210,949**	**1,701,409**

EXPENDITURE 2010

Description	Net Provision	Total Expenditure	Balance Provision	%
Capital Expenditure	150,590,000.00	148,924,872.00	1,664,137.00	**98.8**
Recurrent Expenditure	154,728,000.00	149,778,667.00	4,949,333.00	**96.8**

1. INTRODUCTION

1.1 Background of Department of National Botanic Gardens

Department of National Botanical Gardens contributes profoundly for ex- situ conservation of the plant diversity and implement research and technological programs for promoting amenity horticulture in Sri Lanka.

All Botanic Gardens functioned under the Department are the pioneering botanical institutions, started during the early years of the 19th century. The Gardens are acknowledged both nationally and internationally as a centre of excellence for the collection and study of plants – particularly those tropical and endemic to the region of South East Asia. The Botanic Gardens of Sri Lanka are well known all over the world and are visited by over 1.8 million visitors every year.

The Royal Botanic Gardens, Peradeniya (1821); Botanic Gardens in Hakgala (1861) and Botanic Gardens, Henarathgoda Gampaha (1876) were established by the British. And also first Medicinal Plant Garden was established in 1950s to promote the conservation and sustainable use of medicinal plants and management of Medicinal Plants Collection in Sri Lanka. In addition to that new botanical gardens in Dry Zone and Wet Zone will be opened in Hambantota and Avissawella 2011 for conservation of low country dry and wet zone plants.

In 1912 the National Botanic Gardens functioned as a division under Department of Agriculture After the establishment of it and in 2006 the Department of National Botanic Gardens was established under the Director General. Currently the Department is functioning under the Ministry of Economic Development as pioneering institute for plant conservation and research.

Vision of the Department of National Botanic Gardens

To become the scientifically and aesthetically finest Botanic Gardens in the Tropics by 2015, while becoming the pivotal institution for ex-situ conservation of Sri Lankan plants and providing maximum contribution to the economic growth of the country.

Mission of the Department of National Botanic Gardens

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

1.2 Functions of the Department of National Botanic Gardens

- Planning and implementation of *ex-situ* conservation strategies for the conservation of Sri Lankan plant diversity.
- 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 popularise 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.

1.3 Institutes and units for achieving the functions of the Department

1. Royal Botanic Gardens, Peradeniya
2. Hakgala Botanic Gardens, Hakgala
3. Henarthgoda Botanic gardens, Gampaha
4. National Herbarium, Peradeniya
5. Medicinal Plant Garden, Ganewatta
6. Dry Zone Botanic Gardens, Mirijjawila, Hambantota
7. Seethawaka Wet Zone Botanic Gardens, Illukowita, Awissawella
8. Floriculture Research & Development Unit, Peradeniya
9. Education Centre, Peradeniya
10. President's House Gardens, Colombo
11. President's House Gardens, Kandy
12. President's House Gardens, Nuwara Eliya
13. President's House Gardens, Anuradhapura
14. Temple Trees Gardens, Colombo
15. Prime Minister's Office Gardens, Colombo
16. Prime Minister's Lodge Gardens, Nuwara Eliya
17. Visumpaya, Prime Minister's Lodge Gardens
18. Suwahas Mal Sevana, Independence Square , Colombo
19. Garden Assistant's office, Narahenpita
20. Commonwealth War Graves, Pitakande, Kandy
21. Commonwealth War Graves, Borella
22. Commonwealth War Graves, Jawatte
23. Commonwealth War Graves, Nilaweli, Trincomalee.
24. Haritha Piyasa, Meegallawa

1.4 Staff Details of the Department of National Botanic Gardens

Approved cadre : 699

Current cadre : 423 (this include 17 staff grade officers, 37 officers of Sri Lanka Technical Service, 3 Graduate Agriculture Monitoring Officers, 20 Graduate Program Assistants and 28 officers of Management Service)

EMPLOYMENT PROFILE

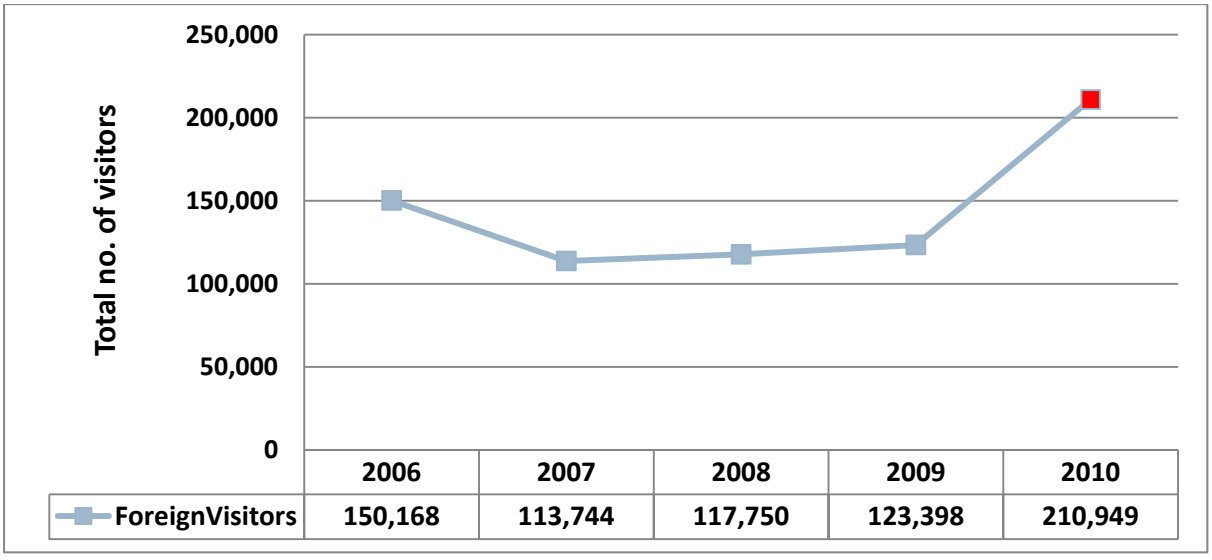
Category	Approved Cadre	Actual Cadre
Senior Level	31	17
Tertiary Level	58	33
Secondary Level	95	72
Primary Level	515	301
Officers from Samurdhi	-	12
Contract Labour	-	255
Total	**699**	**690**

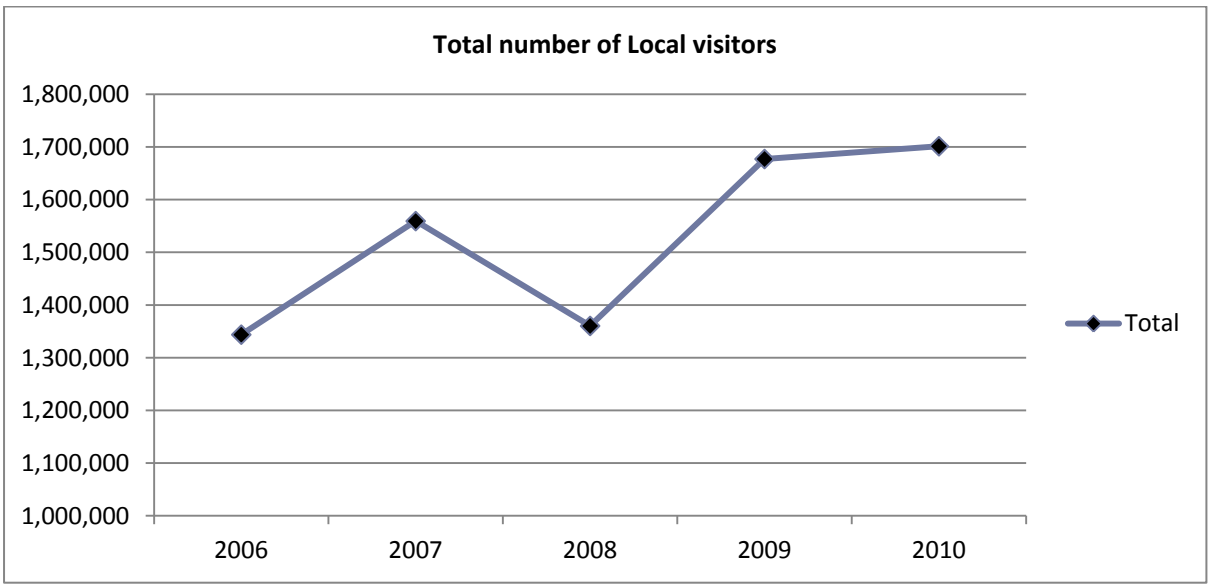
2. Achievements

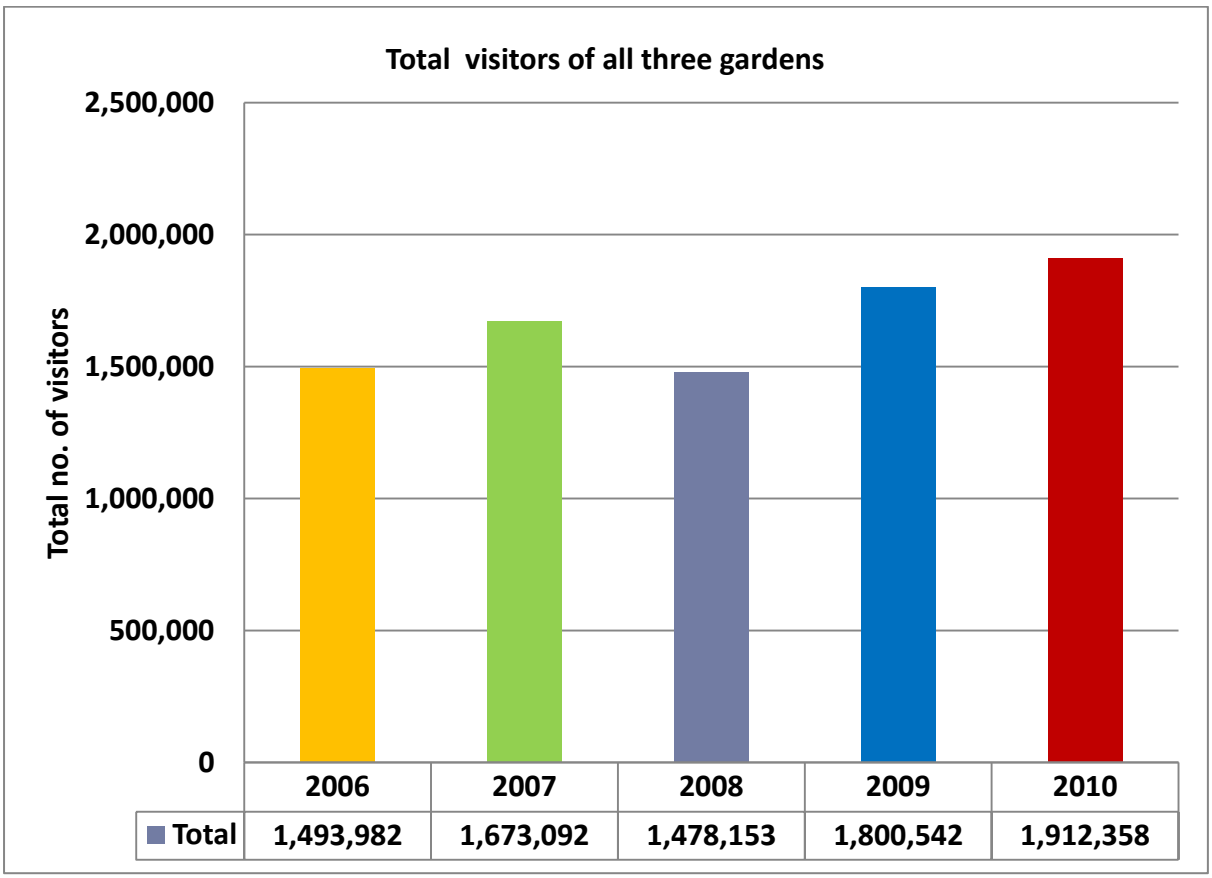
2.1 Visitor Information

Botanic gardens at Peradeniya, Hakgala and Gampaha were maintained at high standards and 1,912, 358 number of people (1,701,409 local visitors and 210,949 foreigners) visited the botanic gardens this year and it is 6% increase of visitors compared to the previous year as well as the number of foreign visitors to botanic gardens in 2010 (210,949) shows a 71% increase when compared to the last Year (123,425).

Visitor Category	Peradeniya	Hakgala	Gampaha	Total
Local Adults	839,327	334,824	137,335	**1,311,486**
Local Children	249,955	123,872	16,096	**389,923**
Total Local Visitors	**1,089,282**	**458,696**	**153,431**	**1,701,409**
Foreign Adults	190,278	9,131	182	**199,591**
Foreign Children	6,060	684	9	**6,753**
Foreign Students	4,130	472	3	**4,605**
Total Foreign Visitors	**200,468**	**10,287**	**194**	**210,949**
Total No. of Visitors	**1,289,750**	**468,983**	**153,625**	**1,912,358**




Total number of Local visitors
1,800,000
1,700,000
1,600,000
1,500,000
1,400,000
1,300,000
1,200,000
1,100,000
1,000,000
2006
2007
2008
2009
2010
Total


Total visitors of all three gardens
Total no. of visitors
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
2006
2007
2008
2009
2010
Total
1,493,982
1,673,092
1,478,153
1,800,542
1,912,358

2.2. Revenue Details

Rs. 179.6 Million was earned as the total revenue from entrance fees, plant sales, and rents etc. That exceeds the total income earned during the similar period in 2009 (Rs. 128.7 million.)

Units	Total Income (Rs.)
Royal Botanic Gardens, Peradeniya	148,259,439.72
Botanic Gardens, Hakgala	19,563,979.12
Botanic Gardens, Gampaha	7,745,576.50
Botanic Gardens, Hambantota	17,915.00
Medicinal Gardens, Ganewatta	800,172.70
Torrington Nursery, Colombo	1,999,017.44
Botanic Gardens Trust Fund	1,263,920.00
Grand Total	**179,650,020.48**

2.3 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- 2010	**20,000,000.00**	**8,100,000.00**	**49,000,000.00**
Revise limits	-	-	-
Real data	**18,211,797.00**	**10,039,878.51**	**41,147,427.54**

2.3 Expenditure

2.3.1 Capital Expenditure

Sub Project	Object Code	Object Details	Net Provision 2010 Budget Rs.(000)	Total Expenditure Rs.(000)	Balance Provision Rs.(000)	%
		Rehabilitation of Buildings & structures				
0	2001	Building and Structures	650	638.152	11.857	98
0	2002	Plant, Machinery and Equipment	300	297.684	2.316	99
0	2003	Vehicles	500	492.290	6.710	98
		Acquisition of Capital Assets				
0	2101	Vehicles				
0	2102	Furniture and Office Equipment	300	297.000	3	99
0	2103	Plant, Machinery and Equipment	300	291.028	8.972	97
0	2104	Buildings and Structures	900	895.009	4.991	99
0	2105	Land and Land Improvements	1,000	991.620	8.380	99
		Capital Transfers				
0	2201	Botanic Gardens Trust Fund	40,000	39,999.999	0.001	100
0	2401	Training and Capacity Building	90	46.961	43.039	51
		Special Projects				
1	2502	Gampaha Garden Development	7,000	6,937.543	62.457	99
1	2502	Ganewatte Medicinal Garden	5,750	5,682.874	67.126	98
2	2502	Floriculture Development Programme	37,000	36,330.695	669.305	98
3	2502	Dry Zone Botanic Gardens,	50,000	49,277.515	722.485	98
4	2502	Avissawella Botanic Gardens	6,800	6,746.502	53.498	99
		Total	**150,590**	**148,924.872**	**1,664.137**	**98.8**

2.3.2. Recurrent Expenditure

Object Code	Object Detail	Net Provision 2010 Budget	Total Expenditure	Balance Provision	%
	Personal Emoluments				
1001	Salaries and Wages	83,000,000.00	82,079,671.00	920,329.00	98.8
2002	Over Time and Holiday Pay	5,300,000.00	4,969,881.00	330,119.00	93.7
1003	Other Allowances	34,928,000.00	32,557,941.00	2,370,059.00	93.2
	Travelling Expenses				
1101	Domestic	1,000,000.00	988,888.00	11,112.00	98.8
1102	Foreign	100,000.00	70,086.00	29,914.00	70
	Supplies				
1201	Stationary and Office Requisites	600,000.00	596,278.00	3,722.00	99.3
1202	Fuel	1,900,000.00	1,699,628.00	200,372.00	89.4
1203	Diets and Uniform	150,000.00	141,749.00	8,251.00	94.4
1205	Other	2,300,000.00	2,094,172.00	205,828.00	91
	Maintenance Expenditure				
1301	Vehicles	1,000,000.00	988,240.00	11,760.00	98.8
1302	Plant Machinery & Equipment	300,000.00	298,367.00	1,633.00	99.4
1303	Building & Structures	300,000.00	298,715.00	1,285.00	99.5
	Services				
1401	Transport	700,000.00	698,390.00	1,610.00	99.7
1402	Postal and Communication	1,300,000.00	1,215,698.00	84,302.00	93.5
1403	Electricity and Water	4,000,000.00	3,825,375.00	174,625.00	95.6
1404	Rents & Local Taxes	600,000.00	596,817.00	3,183.00	99.4
1405	Other Services	16,500,000.00	15,943,636.00	556,364.00	96.6
	Transfers				
1506	Property Loan Interest	750,000.00	715,135.00	34,865.00	95.3
	Total	**154,728,000.00**	**149,778,667.00**	**4,949,333.00**	96.8

3. Royal Botanic Gardens, Peradeniya

3 .1 Introduction

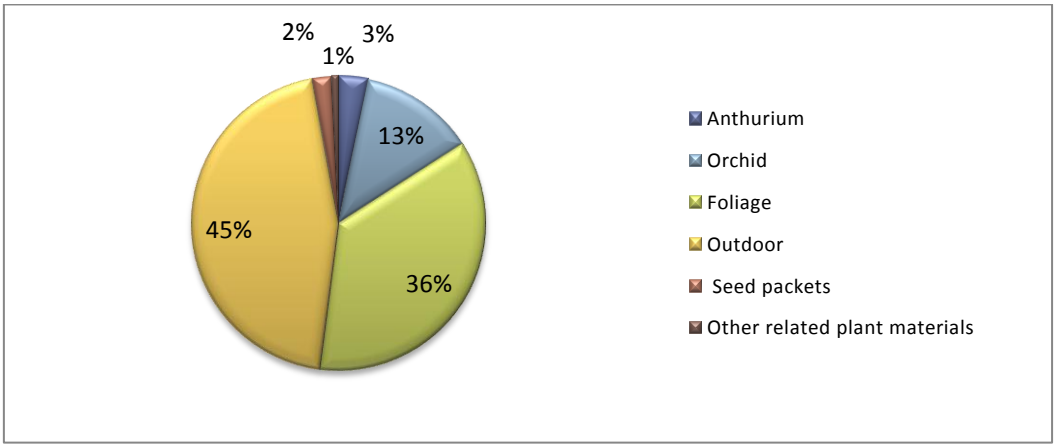
The Royal Botanic Gardens at Peradeniya occupy a horse-shoe-shaped peninsula around which flows the longest river of Sri Lanka, the Mahaweli which is situated in the serene Hill capital, Kandy and located six and half kilometers off Kandy city. The total area is 147 acres (about 60 hectares) containing about 4,500 plant species.

Moreover it is home to a large variety of ornamental plants and other creepers that are used to produce the special spices of Sri Lanka. There is a flourishing growth of huge tropical trees along the lawns and the orchid house is the prime attraction of this garden. This contains more than 300 varieties of exquisite orchids blooming in profusion. The spice garden sustains trees and plants used for the traditional Ayurvedic medicine. The scenic splendour of the garden rose to ethereal heights by the Mahaweli River which flows through its fringes.

The Royal Botanic Gardens Provide opportunities for the public to understand appreciate and manage plant resources in natural and manmade environments.

3.2. Plants production

Large numbers of plants and seed packets and other related plant materials (dry flowers, bamboo pots, spices leaf mould and fresh flowers) were produced for sale during this year. In addition to that 127,794 outdoor plants were produced and 113.5 Kg seeds were collected and used for enhancement of the living collection of the Garden.



3.3. Ex-situ conservation of Plants

There were several activities carried out for enrichment of the existing living collection and ex-situ conservation of plants of the Garden (see table 5) and 25 historic and religious trees were treated on the requests made by Chief monks of various temples island wide.

Flowing activities were carried out

- Planting and replanting of new native trees in the Arboretum
- Planting and replanting of exotic tress in the Arboretum
- Treating of base cavities, stem cavities of trees and securing trees by props, rods and cables
- Technically sound removing of dead/fallen trees in the Arboretum
- Labeling plants
- Carrying out tree surgery programmes

3.4. Education and Training

3,058 individuals were trained on Anthurium, Orchid, Roses, Foliage plants, Gerbera cultivation and propagation. 2,339 individuals were trained on Nursery management, Plant identification, Bio diversity, Tree surgery, Floral arrangements, Post harvesting technologies, Botanic Gardens, Tissue Culture, etc. 1,088 individuals were trained on landscaping during the year 2010.

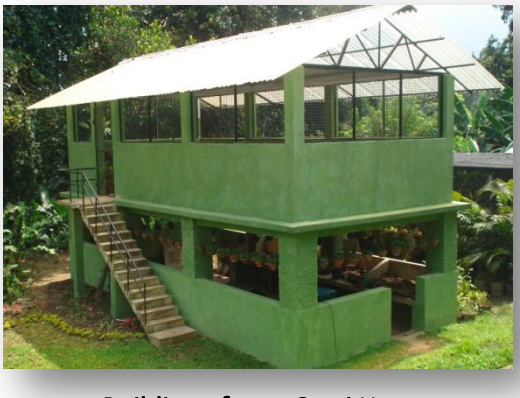
Certificates were awarded to sixteen numbers of students for the successful completion of their two year Diploma Course on Landscaping and Floriculture.

3.5. Infrastructure Development

- Roads carpeting activities at the Main Entrance, Great circle and Royal Palm Avenue were completed. And also Tarring of the road along the river side and repairing of other internal roads were completed.
- A new plant house was constructed for the propagation of cacti and succulent plants.
- Four new toilet complexes with all facilities are being constructed inside the Botanic Garden.
- Several expansion activities were carried out for plant sale centre and the National herbarium .The suspension bridge was also repaired.

- The plant house used for propagation of the saplings of Sri Maha Bodhi tree was upgraded and ''Saraka'' House is being renovated.

Construction of New Toilet Complex



Building of new Cacti House

Renovated 'Saraka' House

Carpeting of internal roads

3.6. Special Events

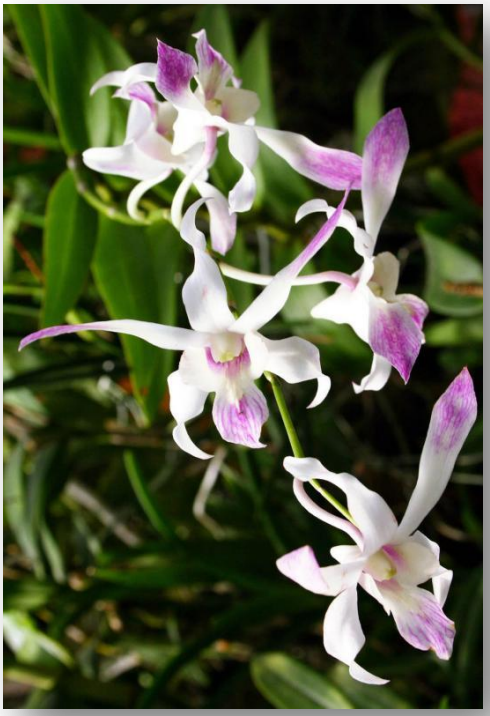
- Japanese Garden was modified on 25th November 2010.
- 204 plants were planted in the Arboretum of Royal Botanical Gardens under the ''Dayata Sevana' programme to commemorate 2nd term sworn of His Excellency the President Mahinda Rajapaksa as well as 105 plants was also distributed to some of other governmental institutes plant under this programme.

Figure 5: Planting of Trees under "Deyata Sewana"

- Hon. Basil Rajapaksa, Minister of Economic Development has visited Royal Botanic Gardens Peradeniya on 1st of May 2010.
- Hon. Ranjith Siyabalapitiya, Deputy Minister of Economic Development has visited Royal Botanic Gardens Peradeniya on 7th July 2010.

4. Floriculture Research and Development Unit

4.1. Introduction



The Floriculture Research and Development Unit is mandated to conduct research programs related to the floriculture sector and also contribute to the development of this sector through training programs, on site advisory services, providing information on investment opportunities in this sector as well as establishing grower organization at district level and providing assistance in the form of material, equipment and quality planting material. The floriculture sector in *SRI LANKA* has emerged to be a lucrative foreign exchange earning venture in the recent past. Thus it is imperative that this sector is further developed to generate income and provide employment as well. The Floriculture Research and Development Unit helps those involved in the floriculture sector to realize their true potential and achieve greater profits with sustainable development of their cultivations, their surrounding environment, villages, towns, cities and the country as a whole.

4.2. Research Highlights

Research trials were carried out on the following topics:

1. The effect of cytokinins on multiplication of topped *Anthurium andreanum in-vivo.*
2. Effect of a combination of cytokinins and auxins, externally applied; on sucker formation and plant quality of *Chlorophytum comosum.*
3. The effect of a combination of cytokinins and Gibberellic acid on shoot formation of topped *Anthurium andreanum in-vivo.*
4. The effect of BAP on seedling germination of *Exacum* as well as the genetic variability among Sri Lankan taxa in the *E. trinervium* complex using Random Amplified Polymorphic DNA (RAPD) analysis to clarify its taxonomic position.
5. Suitable growing medium and fertilizer package for *Dracaena godseffiana.*

6. Effectiveness of extension services used by Anthurium farmers in selected Divisional secretariat Divisions in the Kandy District.
7. Determination of the post harvest dipping solutions for extending the vase life of *Cordyline terminalis* top cuttings (30 cm length with 10 leaves per cutting).
8. Confirming the pathogen causing stem and leaf rot in *Zamioculcus zaminae* as a Bacteria.
9. The effect of cytokinin and auxin on sucker formation, leaf length and number in *Ophiopogan intermedius* (China grass/ Mondo grass).
10. Micropropagation of Gerbera.

4.3. Surveys carried out

Following surveys were carried out on the floriculture industry as student projects.

1. A survey on the floriculture industry in selected areas of the Kandy district – Ankumbure, Alawathugode, Kandy Municipality,Peradeniya ,Gampola, Kadugannawa, Edanduwawe, Gangewatekorale and Katugustote..
2. Survey on the Floriculture Sector in Kandy – Large and Medium scale Nurseries and Flower shops.
3. Survey on the Floriculture Sector in Gampaha district – Export Nurseries and Flower shops.

4.4. Publications

4.4.1. Research

1. Importance of biofilm formation in plant growth promoting rhizobacterial action. In Maheshwari D. K. (Ed.) Plant growth and Health Promoting Bacterial, Microbiology Monographs 18, Springer-verlag, Belin, Heildelbers, pp 81-96.
   Seneviratne,G., Weerasekera, M. L. M. A. W., Seneviratne K. A. C. N., Zavahir, J. S., Kecske's, M. L., Kennedy, I.R.
2. Effect of pre-sowing BAP treatment on seed germination and seedling vigour in Sri Lankan *Exacum trinervium*, an endemic herb. Vithanage, D. S., Dissanayake, N. P., Dayananda, T. G., Krishnarajah S. A and Rubesinghe, M. K. Presented at the Seventh Science Symposium, University of Ruhuna held on 15th December 2010.
3. Genetic variability of *Exaum trinervium* complex in Sri Lanka, Vithanage, D. S., Dayananda, T. G., Dissanayake, N. P., Krishnarajah S. A and Rubesinghe, M. K. Presented at the Seventh Science Symposium, University of Ruhuna held on 15th December 2010.

4.4.2. Other Publications

1000 copies each of 02 Newsletters and 1000 copies each of 10 different Leaflets were printed for free distribution and sale respectively.

An article on the cultivation of Cattleya was published in the “Lankadeepa” news paper.

4.5. Breeding (Orchids and Native plants)

- 48 Orchid crosses belonging to the genera Dendrobium, Vanda, Rhynostylis, Cattleya and the Giant Orchid; were made and seed pod were germinated in the laboratory.
- 09 crosses were made between various species of Chirita; and *Acrotrema walkeri* flowers were selfed. Seeds of *Exacum trinervium, E. affine, Chirita moonii, Acrorema walkeri* and a Chirita cross (*Chirita walkeri x Chirita Spp*., white coloured flowers) were germinated. From which 100 *E affine*, 55 *E. trinervium* , 35 *Chirita* plants and 50 *Acrotrema walkeri* plants were obtained.
- Plants were also propagated vegetatively for *Chrita moonii, Chirita zeylanica, Chirita walkeri, Kendrickia walkeri, Lycopodium*, as well as the hybrids *C.moonii x C. zeylanica* and *C. zeylanica x C. walkeri* through stem cuttings.
- Seeds germinated from a cross between *C. zeylanic* and a *Chirita spp*. with white flowers has yielded a new hybrid which is being evaluated at present.

4.6. Plant Production

Crop	No. of Plants
Orchids (seed culture and mericlones)	**50,522**
Anthurium Seedlings	**9750**
Anthurium Tissue cultured plants	**7320**
Foliage plants	**38,765**
Water plants	**275**
Gerbera	**2123**
Other tissue cultured plants	**258**
Total plant production	109,043

4.7. Floriculture Development in Other Gardens

4.7.1. Gampaha Botanic Gardens

Initiation of cultures and subculture was continued for the micro propagation of Anthuriums and Orchids (Dendrobium). General maintenance was carried out for the Fern, Gerbera and Water plant collections. 327 community pots were produced from 739 bottles of seed cultured Orchids, of which 109 community pots and 75 numbers of 2" size individual pots were sold. 339 Gerbera seedlings and vegetatively propagated plants were produced (i.e. 175 & 164 respectively).

Training programs on Bio-diversity and Functions of the Botanic Gardens was conducted for 40 teachers and 602 students. Training on the cultivation of Gerberas, Anthuriums, Orchids and Foliage plants was conducted for 40, 385, 297 & 152 individuals respectively. Information on the cultivation of Orchids was also provided for 06 school projects.

Specimens of 10 pests and 10 diseases that affect floriculture crops were collected and identified.

4.7.2. Dry Zone Botanic Gardens, Hambantota

The Orchid, Anthurium and Ornamental plant collections are being maintained. 97 plants were added to the present collection (32 Orchids, 04 Cactus, 20 Anthuriums as well as 41 Ornamental and Foliage plants). 100 foliage plants were propagated at the Nursery.

5100 Orchids belonging to the various genera (3000 seedlings of Dendrobium in 81 varieties, 1000 Hybrids of Cattleya in 42 varieties, 500 Hybrids of Mokara in 21 varieties and 600 Vanda &

Ascocenda in 36 varieties) were imported from “Kultana Orchids” in Thailand for plant propagation and breeding programs.

Plans were also provided for bed construction for planting of Anthuriums and 2000 plants required for planting were also purchased and are being maintained at the Anthurium nursery in Royal Botanic Gardens, Peradeniya until completion of beds.

1200 Orchids produced at Peradeniya were also provided for the new Orchid net houses constructed. Assistance was provided for purchasing and planting of Anthuriums in beds as well as potting of Orchids. Officers and personnel at the garden were also trained in the cultivation of Orchids and Anthuriums.

4.7.3. Hakgala Botanic Gardens

300 Limmonium plants sent with the complements of “KF Bio-Plants”, Mumbai, India were cleared and transported to the Hakgala Botanic Gardens for sale and distribution to growers.

4.7.4. Wet Zone Botanic Gardens, Avissawella

A project proposal was prepared for grant aid under Korean International Cooperation Agency (KOICA) on the establishment of a new Floriculture Research cum Education and Training facility.

1200 Orchids produced at Peradeniya were also provided for the new Orchid net houses constructed. Assistance was provided for purchase and planting of Anthuriums in beds as well as potting of Orchids. Officers and personnel at the garden were also trained in the cultivation of Orchids and Anthuriums.

4.8. Education and Training

Subject	Duration	Number of Classes	No. of Participants
Orchid Cultivation	01 day	30	**873**
	Practical training	20	**70**
Foliage plants	01 day	39	**1613**
	Practical training	15	**50**
Anthurium	01 day	53	**2115**
	Practical training	35	**169**
Gerbera cultivation	01 day	11	**258**
Tissue culture	05 days	09	**55**
Other programmes	01 day	12	**431**
Total		224	5634

A lecture demonstration was conducted on tissue culture for 110 students from Vavuniya (i.e. Northern Educational Zone).

A training programme on the cultivation of Anthurium was conducted for 27 growers at the Polonnaruwa inter provincial training centre of the Department of Agriculture.

A workshop on 'Value added Plants" including practical and theory sessions was held at the Rajawaka training center at Ratnapura.

Lectures on "Bonsai" culture were conducted for 15 students from the Post Graduate Institute of Agriculture, University of Peradeniya.

Lectures on the cultivation of Orchids and Anthuriums were conducted for AI's at the In-Service Training Institute, Rajaweka.

Training progammes in Tamil were conducted for 52 individuals at the Elkaduwa Estate on Cultivation of Anthuriums. Lecture demonstrations in Tamil were also conducted on Orchids, Anthriums, Roses and Landscaping for 57 students from the School of Agriculture.

Practical demonstrations on the cultivation of Foliage plants were also given on Anthuriums & Orchids for over 200 students from the Faculty of Agriculture, University of Peradeniya.

A lecture on the use of tissue culture in floriculture crops as well as 02 practical sessions on initiation of cultures and acclimatization was held for 12 participants following a workshop on tissue culture at the Post Graduate Institute of Science.

4.9. Advisory Services

The tissue culture unit at the Agriculture Training Centre Wariyapola as well as nurseries of 03 growers in Thalawatugoda and Kiribathgoda were visited and onsite advices provided.

Ruvini Aqua Plant Nursery at Panadura, was visited as part of an Export Development Board initiative to implement an integrated agriculture model project programme. The "Haritha" plant nursery at Gampaha was also visited and onsite advice provided.

Free advice on matters related to commercial floriculture, nursery management, pest and disease management as well as *in vitro* propagation was disseminated to 580 individuals personally visiting this unit or by post.

4.10. "Suwahas Mal" Programme

The "Suwahas Mal" programme initiated in 2005 to uplift the economic standards of medium and small scale floriculture growers was continued during this year as well with the following activities that benefited theses growers. Over 400 monthly meetings of these societies were attended by officers attached to this unit.

Eighty three suwahas mal societies are functioning in Puttalam, Kandy, Matale, Gampaha, Kegalle, Nuwara-Eliya, Kalutara, Uva and Colombo. One society was formed in Badarapola of Matale District during this year.

4.10.1. Programmes to enhance the capacity of the growers

Exhibitions, plant sales, training workshops were organized island wide for growers to enhance marketing and their capacity in floriculture. Moreover nurseries of the growers under this programme were visited to provide onsite advice.

a. Exhibitions and plant sales

District	Large District Level	Small localized
Gampaha	04	**60**
Kandy	01	**02**
Matale	03	**01**
Kegalle	01	**16**
Hambantota	02	**-**
Puttlum	01	**06**
Badarawela Balangoda	-	**01**
Kaluthara	02	**02**
Total	14	88

b. Workshops

District	No. of Workshops	No. of Participants
Gampaha	06	**365**
Kandy	01	**75**
Matale	01	**50**
Puttalum	05	**70**
Kegalle	20	**324**
Hambantota	13	**225**
Nuware Eliya	05	**128**
Total	51	1237

c. Nurseries visited

District	No. of Nurseries
Gampaha	**354**
Kandy	**02**
Matale	**16**
Puttalum	**33**
Kegalle	**111**
Hambantota	**31**
Nuwara Elilya	**40**
Total	587

d. Other Programmes

Putlum District

To assist in marketing of products growers of Suwahas Mal organizations in the area were linked with exporters. 6988 plants were produced for exporters on contract basis with growers earning a sum of 112,545.00 SL Rupees.

Gampaha, Kegalle & Hambanthota Districts

Members of "Suwahas Mal" societies in the above areas were taken on field trips to visit other plant nurseries in various places. 2, 3 and 13 field days/visits were made with the participation of growers of "Suwahas Mal societies belonging to the Gampaha, Hambantota and Kegalle districts respectively.

4.11. Other Activities of the Unit

Attended the Regional Expert Consultation on Floriculture in Asia, held at Kunming, China from the 07th – 09th of January 2010; and presented a paper on the status of floriculture in Sri Lanka.

100 shade houses were constructed in the Bingiriye Divisional Secretarial area under the "Bingiriiya Agriculture Export Village" project implemented by the Export Development Board were inspected for suitability of growing Anthuriums and Foliage plants.

183 sites in 31 grama niledari sectors, belonging to individuals who were eligible to participate in the "Bingiriya Agriculture Export Village" were visited to select suitable sites for the cultivation of Anthuriums and Foliage plants for the construction of net houses and implementation of the programmme initiated by the Export Development Board. 57 individuals were selected for the implementation of the project. 70 individuals were trained in potting of Anthurium plants for initiation of cultivations.

Renovations were carried out for the 2" pot glass house at the Orchid Nursery as well as the Tissue Culture Laboratory.

5. National Herbarium

5.1. Introduction

The National Herbarium is the place where dried herbarium specimens of the flora of *SRI LANKA* and many other specimens of exotic and cultivated specimens are preserved for systematic studies. Well over 148,000 herbarium specimens are kept in strong cupboards for reference. About 3,500 books and other periodicals related to the flora are in the library collection for reference.

The National Herbarium actively involved in plant exploration, identification, specimen preparation, also documentation and revision of revision of floral wealth of the country. By surveying and inventorying plant genetic resources especially for Food and Agriculture, it contributes significantly to the development of the national economy.

It provides facilities to the local and foreign researchers to carry out taxonomy related research work also serving the National Plant Quarantine and Customs to identify plants correctly when legal matter arises in plant and plant material import and export. Recently it has also being recognized as National Red Listing Authority of plants in Sri Lanka. The National herbarium engaged in exchange of knowledge and specimens with the herbaria and research institutes of the other parts of the world.

5.2. Plant Exploration and Floristic Research

5.2.1 Field Exploration

Following field explorations, plant collection were carried out and specimens were identified, verified and specimens/slides were prepared and added to enrich the National Herbarium collection and branch herbaria at other Botanic Gardens.

Place	Number of Field Trips	No of specimens collected		
		Higher Plants	Mosses	Ferns
Hakgala Botanic Gardens	02	_	83	-
Corbert's Gap , Knuckles	01	25	30	-
Weudakanda forest reserve	01	44	30	05
Dolosbage -Raxawa	01	20	61	
Kitulgala Forest Reserve	01	50	49	10

2.2. Identification and Enrichment

Type of collection	Source	No of specimens / slides		Enrichment
		Prepared	Verified and added	
Higher plants	Field exploration at Kitulgala , Knuckles, Kelabokka, Loolkandura, Adams Peak, Hunnasgiriya	148	148	NH-PDA
	Collection of Suman Neupane –PhD student (F-Rubiaceae)	82	82	NH-PDA
	Collection of Dr. M. Jayasuriya from Kanneliya & Sinharaja	286	420	NH-PDA
	Collection of Dr. Singhakumara		206	NH-PDA
	Collection of Prof. S. Gunatilleke		1330	NH-PDA
	Collection of Mr. M.M.D.J. Senarathne		155	NH-PDA

Type of collection	Source	No of specimens / slides		Enrichment
		Prepared	Verified and added	
	Collection of Dr. D.S.A Wijesundera & Mr. C. Jayasinghe form Nilgala		28	NH-PDA
	Collection of Mr. S. Fernando	05	05	NH-PDA
	Deposited as Voucher specimens	24	24	NH-PDA
	Flora project		445	NH-PDA
Mosses	Hakgala Exploration	105	35 70	NH-PDA Hakgala
	Rangala- Corbert's Gap	23	23	NH-PDA
	Ambagamuwa exploration	48	48	NH-PDA
	Dolosbage -Raxawa	50	50	NH-PDA
	Hunnasgiriya exploration	45	45	NH-PDA
Ferns	Fern Flora project		965	NH-PDA
	Collection of Prof. S. Gunatilleke		59	NH-PDA

5.3. Authentication and Dissemination of Botanical Information

Accurate botanical information on plants was disseminated to the general public, students, government institutes and private organizations on request basis.

5.3.1. Information given to visitors

- Plant information on 17 species was provided to Plant Quarantine Division, Department of Agriculture to issue import permits.
- 1511 Higher plants, 366 Mosses were identified and authenticated as requested by the public.
- 179 students, 370 university students, 349 other institutions visited the Herbarium and obtained information as necessary.

5.3.2. Preparation of Database

Database for mosses using voucher specimens were prepared with 3291 total entries by 70 families, 1400 species and also phenology of 5 endemic species at RBG was recorded.

5.3.3. National Red listing project

Data compilation and assessments of species for the preparation of National Red Data Book and species assessments for Red listing of nationally and globally threatened plants were carried as follows;

Description	Entries	Persons involved
Angiosperm species for National Red listing assessment	1665	1. Dr. D.S.A.Wijesundara 2. Mr. D.M.U.B.Dhanasekera 3. Dr. A.M.A.S. Attanayake 4. Mrs. R.A.S.W.Ranasinghe 5. Mrs. N.P.T.Gunawardena 6. Mrs. G. Fonseka 7. 06 Data Compilers appointed under the project funded by the Ministry of Environment.
Fern species for National Red listing assessment	29	
No of families	116	
Total number of entries	**46253**	

And also, 07 expert committee meetings were held to evaluate the species for National Red data Book and 1111 species belonging to 127 families were evaluated with the participation of experts on flora from Universities, the Biodiversity Secretariat & other relevant organizations.

5.4. Training and Education

Training programmes, lectures, Workshops and meetings on plant exploration, identification, nomenclature, herbarium management, biodiversity and

conservation were conducted effectively during the year as follows;

5.4.1. Training programmes and lectures

Description	Subject	Target group/ Institute	No. of Participants
One day Training Programmes	History of Herbarium, Plant Exploration & Herbarium Techniques.	School Children University Students Department of Wildlife Trainees (RBG) & other institutes	224 175 94 149
One day Lectures	Biodiversity & Taxonomy. Identification of medicinal plants their synonyms and habitats. Importance of plant conservation during rural development.	Trainee students- RBG Traditional Ayurvedic Practitioners Participants of Second community Development & Livelihood Improvement Project under Gamidiriya Foundation	09 100 29
Coordinating and conducting the special Industrial training Programmes (2 weeks & One week Programmes)	Activities of Herbarium & Royal Botanic Gardens.	Botany special -3rd year students of Dept. of Botany, University of Peradeniaya Trainee students of University of Kelaniya A Student of Wayamba University.	11 3 1

5.4.2 Workshops & meetings

A five day work shop on Chromosome counting and Karyotyping of Sri Lankan Plants had done by Prof. Rose Samuel & Prof. Hanna Schneeweiss, University of Vienna for Academic staff of the University of Colombo, Peradeniya, Sri Jayawardena-pura, IFS, Tea Research Institute- Talawakele & National Herbarium.

A three day workshop on Palynology had done by Prof. Martina Weber, University of Vienna for Academic staff of the University of Peradeniya and Colombo, Department of National Museum, Technical staff of the Department of forensic medicine, Department of Geology of University of Peradeniya.

5.5. General maintenance of the herbarium specimens

Activity	Amount
Herbarium specimens repairing and mounting	18,855
Specimens treatments for insect damage (poisoning)	452
Specimens deep freezing	3,926
Specimens mounting	818
Specimens remounting	138
Species covers adding	1298
Genus covers adding	761
Specimens cleaning	28,694
Books cleanning	540
Pressing Specimens	573
Addition of Tags	520
Addition of Labels	969
Addition of Labels for Genus covers	511
Addition of Naphthalene sacs	125 kg
Revision of New Boards for new collection	50

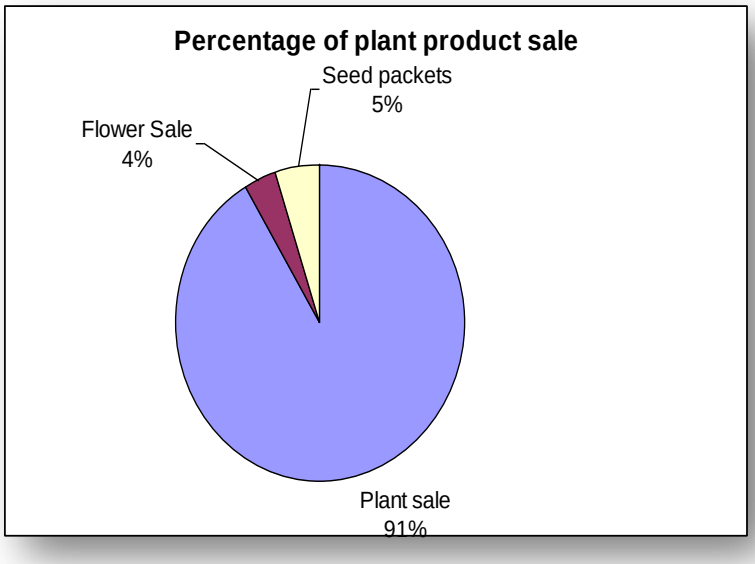
6. Botanic Gardens, Hakgala

6.1. Introduction

Botanic Garden at Hakgala was established in 1861 for the promotion of Cinchona cultivation in Sri Lanka and this garden is regarded as the second largest Botanical garden in the island. The garden administrates the garden of President House and Prime Minister Lodge Nuwara Eliya. The garden is situated 9.5 km. from Nuwara Eliya towards south-east direction along Nuwara Eliya - Badulla road. The total extent of the garden is 27 hectares. The total area of the garden is 555 acres with the newly developed 27 acres area for visitors.

6.2 Plant production

Plant production mainly carried out in two nurseries having poly tunnels and plant house for propagation and plant production activities. Plants for cut flowers are maintained in poly tunnel and open field.



77,806 plants were produced in various pot sizes and cutting, seedling etc. for sale as well as for planting in the garden this year. 71,754 plants were sold as pot plants and it shows an increment compared to the last year (62,181).

16.878 Kg seeds were collected from garden beds and the nurseries. Collected seeds were used for sale, garden use and usage of other units of Department of National Botanic Gardens.

9,460 flower seeds packets were produced and 5,045 packets were sold. 4,177 seed packets has used for the Garden in ornamental sections.

6.3. *Ex- Situ* Conservation, Plant exploration

Ex-situ conservation of Montane zone plants under sub tropical climate is one of the main objectives of the Garden with an intention to enrich the plants collection with exotic, indigenous, endemic, rare, threatened, endangered plants.

Flowing activities carried out for enrichment of the plant collection of the garden.

- 366 plants belong to 32 species were planted in the arboretum.
- Tress were removed which were fallen due to heavy wind.
- Branches were removed and cleaned where necessary.
- New plants were added for the nursery.
- 350 tree labels were fixed and 40 information labels were prepared and fixed.
- 70 tissue cultured *Dendrocalamus gigantius* plants were planted below Damwel section.
- 20 beds were replanted with 8 species of ferns.

Indigenous plants, seeds collected from garden and outside were raised in the repaired shed near the curator bungalow. 912 seedlings are maintained in the shed and another 312 seedlings were added to the nursery.

Plant Seedlings growing in the nursery

6.4. Training and Education

334 individual were trained on requests mainly on floriculture and landscaping as follows;

Courses	Students	Diploma/ University students	Government officers	Total
Landscaping		53	45	**98**
Floriculture		122	35	**157**
Biodiversity	66		08	**74**
School project	5			**5**
Total	**71**	**175**	**88**	**334**

Six months training programme on floriculture and landscaping was started in August at NITA Regional Office, Nuwara Eliya. 07 students were satisfactorily completed the course.

6.5. Development Activities

6.5.1. Land development

- Concrete hexagon slabs were laid inroads of the fernery. About 70m length was covered by using 700 slabs.
- Water splitting system and Small pond near the bridge was renovated in the Japaneese garden.
- Renovation of foot paths at Rock garden was started and completed 100m length.
- Azalia plants were planted in 100m length along the road of Azalia section to improve the Gate boarder.
- Two sides of the main entrance road near the Madapokuna ela was rearranged and designed.

6.5.2. Infrastructure development

- Toilet pit (New 5x6 feet) was completed for Nock Memorial Public toilet in Lower flower Garden.
- 6 summer huts, office, stores, wall, 4 ponds 3 gates were painted.
- Timber flooring of Circuit bungalow was completed and 6 Rooms, dinning, visiting and corridor were painted. And also roof of the circuit bungalow was renovated.
- Two rooms of Circuit bungalow were furnished by new furniture which includes four single beds, two cupboards, two mirror table, two bedside cupboards, two baggage racks.
- The renovation of labour quarters was completed by the Department of Building.
- One side of the plant house was covered by the corrugated transparent sheets.
- 1 Km of length of the main road was renovated.

New furnitures and timber flooring of the circuit banglow

Rnovated labour quarters

plant hose with new sheets

6.6. Other Activities

- 3000 potted plants were prepared to beautify the Independent day premises at Butthala.
- 113 tree seedling were planted to celebrate the 2nd sworn of H.E. the President, Mahinda Rajapaksa
- 8 Cassuarina montana trees were root balled and planted in the section.
- 27 Name boards, 3 Maps and 7 sign boards were fixed inside the Garden for visitors' information.
- A media discussion was held which is organized by the Ministry of Economic development with 20 media personal on 27.09.201 at the Garden.
- An exhibition stall was prepared for the exhibition held at Research station – Seetha Eliya.

6.7. Special Visitors

- Hon. Ranjith Siyabalapitiya, Deputy Minister, Ministry of Economic Development has visited the Garden 08.05.2010
- Ambassador of the Nepal in Sri Lanka has visited the Garden on 23.10.2010.
- Ambassador of the Bangladesh in Sri Lanka has visited the Garden on 24.10 2010.

7. Botanic Gardens, Gampaha

7.1 Introduction

Henarathgoda Botanic Gardens, Gampaha was established in 1876 for the promotion of the Para Rubber cultivation in Sri Lanka. It is situated 2 km from the Gampaha town on the Gampaha-Minuwangoda road. Originally it was 36 acres in extent and with the addition of 7 acres in 2005 it is now 43 acres in total extent. The Garden was generously patronized by over 150 000 local and foreign visitors during the year.

Ex-situ conservation in order to conserve biodiversity in the area, Education and extension services on Floriculture & Landscaping, Dissemination of Botanical information, Research related to floriculture & Tissue culture to promote amenity horticulture, Care and maintenance of religious and historic trees, Production of plants for sales and general maintenance, Organizing flower exhibitions to provide a market for small scale growers are the main activities performed by the Garden.

7.2 Infrastructure Development

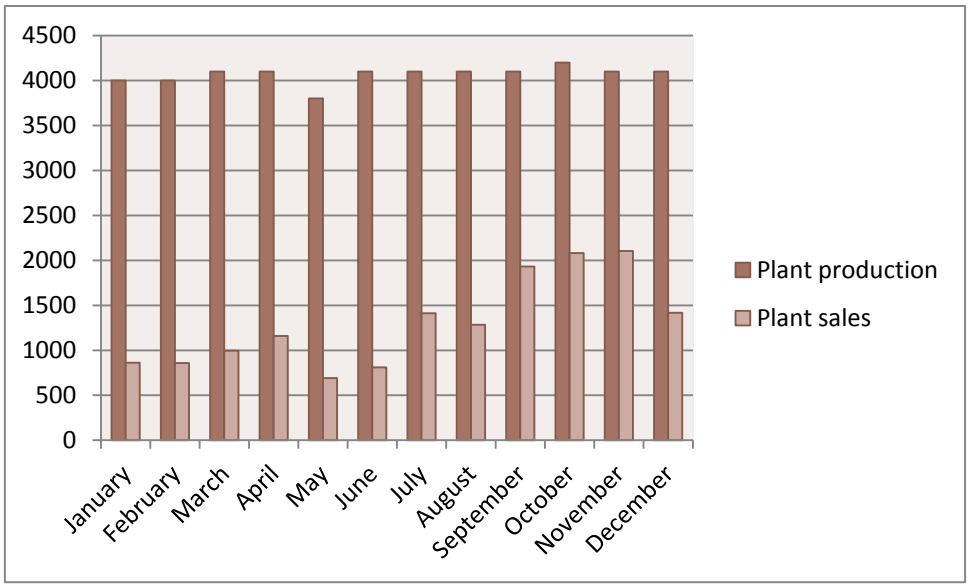
The flowing development activities were carried out to enhance the capacity and facilities of the garden to provide the better services for the visitors.

- Completion of the new main entrance gate from the lake side.
- Tarring of about 500 m of inner roads within Garden premises.

- Completion of a new toilet complex.
- Reconstructing the security hut near the main gate.
- Development of the tree hut.
- 3 new paddle boats were introduced to the newly established water garden.

7.3 Plants Production

Large numbers of Plants were produced and 15,614 plants were produced for sale.



Plant production and sale

7.4. Education and training

One day programmes on Anthuriums, orhchids, foliage, roses, gerbera cultivation and plant tissue culture, etc.. were conducted as follows;

Category	Number of programmes	Number of Participants
Anthurium	10	**291**
Orchid	09	**105**
Foliage	08	**38**
Gerbera	08	**40**
Nursery Management	03	**106**
Landscape Gardening	09	**33**
Other	16	**926**
Total	**63**	**1539**

Following workshops have been organized by the 'Suwahas Mal' project.

subject	No of participants	No. of workshops
Biodiversity	143	**05**
Fertilizers	**190**	**03**

8. Medicinal Plant Gardens, Ganewatta

8.1 Introduction

Medicinal Plant Garden, Ganewatte is situated in the north eastern province about 15 miles away from Kurunegala. Being located in the intermediate zone, it offers an ideal site for cultivating a large number of medicinal plants. The garden is 52 acres in extent. About half of the land is occupied by coconut cultivation. And 22 acres is occupied by medicinal plants.

The main objective of the garden is to conserve the rare species which are not easily available, to demonstrate systematic plantation of medicinal plants & method of collection and to observe the rare species.

8.2. Activities carryout during the year 2010

Improvements to the garden were initiated by developing land and road, constructing the fence, shade houses, and a garage, completing officer quartets and accelerating the planting programme. 16,731Plants were produced and 11,329 were sold during the effective accelerated planting programme.

395 people visited the garden to obtain the information on medicinal plants and to learn conservation and utilization of medicinal plants as well as 49 individuals visited to obtain some medicine for their necessities.

9. Dry Zone Botanic Gardens, Hambantota

9.1. Introduction

The Dry Zone Botanic Gardens is the first botanic gardens in Sri Lanka which is being designed by the local experts after 130 years. The garden is located in Mirijjawila, Hambantota District of the Southern Province and development activities was started in year 2006.

Dry zone forest vegetation is fast disappearing due to various human impacts and in particular about 98% of dry zone forest vegetation in the Hambantota area has been lost during the last 30 years. The main purpose of the new garden is to conserve dry and arid zone plants ex-situ in short term and in long term, to carry on study 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.

9.2. Activities carryout during the year 2010

Internal Roads were constructed to enhance the road system of the garden. Internal irrigation system completed with micro irrigation system for efficient water usage for nurseries at the garden. A new field office with dormitory and four shade houses were constructed to enhance quality and capacity of the planting programme.

Maliththangas wewa and Demateththa Wewa Internal lakes were upgraded. Internal raw water distribution system was established for pumping water effectively for the garden. Lightning protection system was established to avoid damage to the structures from heavy lightning around the area and also weather station was established to collect and monitor weather data regularly.

45 iron benches were set up in the garden as well as 01 pergola for indoor plants were established. 284 flower cement pots in different sizes are being prepared. Landscape development activities were continued preparing land for medicinal plants, preparing land for flower gardens, landscaping avenues, extending *Baleria* hedges.

68 individual plants belong to 12 indigenous species were collected and added to the living collection of the garden. Grafting for Sea hibiscus, *Hibiscus* and *Flumeria* and layering for *Ficus*, *Nerium* was carried out as propagation methods. 5975 no. of ornamental plants and 90 no. of forest plants under 5 sp. were propagated and also 50 Anthurium plants, 40 orchid plants, 500 outdoor and indoor plants were propagated at nurseries. 203 forest plants and 2730 ornamental plants were planted in the arboretum and avenues. Phenological studies were carried out for 08 species of periodic plants to study how these species are influenced by seasonal and interannual variations in climate.

10. Wet Zone Botanic Gardens, Avissawella

10.1. Introduction

The garden land extent is 62 acres which is adjacent to the Ilukowita Primary School situated in Illukowita, Avissawella in the Western province. Threatened and vulnerable flora in the area would be conserved satisfactorily for the future by this Botanic Garden in the area and also uplift the tourism industry, fast growing floriculture industry in the island. The garden serves as a laboratory area for Botany and Ecology students and researchers, an area for educational research, a recreation area for families. The main objective of the botanic gardens is the ex-situ conservation of wet lowland plants with the improvement of wet zone landscape.

10.2. Activities carryout during the year 2010

Land preparation and construction of landscape features were carried out as planting carpet grasses along about 2-3 acres of the garden and maintained as a lawn area, developing the Kubuk garden as water garden with three water pools. And also small lakes are being developed in the garden.

The new office building was completed with all facilities such as furniture, water, electricity, internet, etc.. and fence for the front of the garden was established temporarily avoid unauthorized access.

Floriculture nurseries were established as Polytunnels for cultivation of Anthuriums and Orchids. 500 Merangi (White)plants and 500 Calisto (Red) plants were maintained at nurseries. 1500 two inch potted orchids plants were maintained healthly at nuseries and also special planting prgrammes were conducted for ex-situ conservation.

11. RESIDENTIAL GARDENS OF H.E. THE PRESIDENT AND HON. PRIME MINISTER

Residential gardens of H.E. the President and Hon. Prime Minister in Colombo, Kandy, Anuradhapura and Nuwara Eliya were maintained at high standards. Development activities carried out at Hon. Prime Minister's house, Colombo was successfully completed. Newly developed area in the President's House, Kandy was landscaped satisfactorily. Equipments, machineries were purchased for landscaping purposes and other gardening uses.

Flower, vegetables and fruits plants nurseries are being maintained successfully and supplied the flowers, vegetable and fruits as necessary for in house purposes.

12. COMMONWEALTH WAR CEMETERIES

The Commonwealth War Cemeteries at Kandy, Jawatte, Borella and Trincomalee were maintained at high standards. The War Cemetery at Jawatta, Borella and Kandy was upgraded. A new water sprinkler system was established in the War Cemetery at Tincomalee and garden of the cemetery was upgraded.

Upgraded war cemetery at Jawatta

Upgraded war cemetery at Kandy

Upgraded war cemetery at Trincomalee

newly established water sprinkler system at the war cemetery , Trincomalee

ACTIVITIES PLANNED FOR 2011

Program in Mahinda Chintana	Activities Planned
A sustainable policy for environmental conservation and eco tourism promotion	Continuation of the development activities of the Mirijjawila Botanic gardens initiated for the conservation of low country dry zone plants; 1. Construction of Summer Houses 2. Construction of Entrance Complex and vehicle Park 3. Construction of office for Floriculture Section 4. Construction of Field Office and Service Yard Office 5. Planting and plants conservation program 6. Landscape development activities Continuation of the development activities of the Avissawella, Illukovita Botanic gardens initiated for the conservation of low country wet zone plants: 1. Construction of the Car park 2. Construction of the Ticket Counter and Main entrance 3. Completion of Kumbuk garden 4. Establishment of the Internal Road Network 5. Implementation of Floriculture Extension Program 6. Construction of a Cafeteria
Ensuring the biodiversity conservation	1. Continuation of the studies on lower plants such as lichens, bryophytes 2. Revision of the Flora of Sri Lanka 3. Preparation of Red Data List for Sri Lankan Plants 4. Ex-situ conservation of Sri lankan flora 5. Enhancing the germ plasm collection of Ganewatte Medicinal Plant Garden 6. Initiation of preparation on database of Invasive Plants in Sri lanka 7. Continuation of conservation of trees with historic and or religious importance 8. Conducting of at least 10 field explorations by each botanic garden 9. Computerization of herbarium specimens 10. Anatomical investigation of sri Lankan plants

Farmers (in floriculture) will be equipped with required technological and other skills	1. Conducting lectures, workshops, seminars on floriculture and landscape gardening. 2. Holding exhibitions on floriculture, environment conservation within and outside the botanic gardens. 3. Publication of leaflets, conducting TV programmes on floriculture and landscape gardening. 4. Organizing floriculture growers by setting up of Floriculture Farmer Organizations. 5. Cary out floriculture promotion programme for up lift the floriculture industry in the country. 6. Establish cut flower sales out lets island wide.
Initiate long and short term research programs on potential ornamental plants.	1. Exploration of indigenous plants with a floricultural potential, production of new varieties and conducting research to introduce these in to the trade. 2. Exporting quality planting material from foreign countries. 3. Conducting research on pre and post harvest techniques 4. Conducting research on tissue culture and bio technology 5. Conducting research on aquatic plants, value added products and dried flowers for the development of floriculture industry.
Livelihood skills development programs will be implemented	1. Conducting three-month, one-year and two-year courses on Floriculture and plant conservation 2. Providing Advisory services on floriculture, amenity horticulture and plant conservation.