



ஈன் பரீகேதன ஈயததத கரும்பு ஆராய்ச்சி நிலையம் Sugarcane Research Institute

வாரீகவ வாரீவ
ஆண்டறிககை **2010**
Annual Report



SUGARCANE RESEARCH INSTITUTE

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Hon. Minister of Minor Export Crop Promotion
Ministry of Minor Export Crop Promotion
Govijana Mandiraya
80/5, Rajamalwatta Avenue
Battaramulla.

Honourable Minister,

**REPORT OF THE SUGARCANE RESEARCH INSTITUTE
FOR THE PERIOD OF 01.01.2010 TO 31.12.2010**

On behalf of the Board of Governors of the Sugarcane Research Institute, I have pleasure in submitting the Annual Report of the above institute for the financial year from 01.01.2010 to 31.12.2010.

Yours faithfully
SUGARCANE RESEARCH INSTITUTE



SK Cyril
Chairman
Board of Governors

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Vision

To be the centre of excellence in sugar technologies in Sri Lanka

Mission

Increase productivity, profitability and sustainability of sugar industry in Sri Lanka through development and dissemination of appropriate sugarcane technologies

Objectives and Future Directions

The institute's objectives and future directions include the increasing of productivity, lowering the cost of productions, enhancing grower income and promotion of utilisation of by-products of the sugar manufacturing process

Board of Governors

Dr. S S B D G Jayawardena	Chairman (Actg.)	Appointed member representing eminent Scientists (from 04.01.2010 to 17.05.2010)
Mr Nishan M Muthukrishna	Chairman	Appointed member representing eminent scientists (from 17.05.2010 to 01.12.2010)
Mr S K Cyril	Chairman	Appointed member representing eminent scientists (from 01.12.2010 to 31.12.2010)
Prof. H P M Gunasena	Member	Appointed member representing eminent scientists (from January to May 2010)
Dr N C Kumarasinghe	Member	Director (<i>Ex-Officio</i> -member)
Ms L D Senanayake	Member	Nominated member of the Ministry of Finance (from January to May 2010)
Mr D S U Wickramaarachichi	Member	Nominated member of the Ministry of Finance (from July to November 2010)
Mr R M G K B Ratnayake	Member	Appointed member representing eminent scientists (from January to May 2010)
Mr Newton Pieris	Member	Appointed member representing eminent scientists (from May to November 2010)
Mr Sampath Gajadheera	Member	Appointed member representing eminent scientists (from May to November 2010)
Mr Bharatha Ramanayake	Member	Nominated member of the Ministry of Supplementary Plantation Crop Development (from January to May 2010)
Ms Disna Dharmasekara	Member	Nominated member of the Ministry of Plantation Industries (from July to November 2010)

Chairman's Review

Established by the Act. no. 75 of 1980 of the Parliament of Sri Lanka for the purpose of catering to the technical needs of the sugar industry of Sri Lanka, the Sugarcane Research Institute (SRI) has achieved, so far, a considerable progress though there were setbacks in achieving the targets of the sugar sector of Sri Lanka due to major changes that had taken place in the sector.

In the year 2010, nearly Rs. 41 billion was spent on the import of sugar, and considering the sugar consumption pattern and the trend of the price of sugar in the world market, the expenditure could rise to about Rs. 45 billion in the year 2011. Since this trend is detrimental, in future, for the country, sugar production in the two existing mills should be doubled by encouraging farmers and improving their knowledge to increase cane supply to the mills to operate them at their full capacities and by introducing superior sugarcane varieties suitable for local conditions.

According to the “*Mahinda Chinthana Vision for the Future*”, it has been planned to take actions in 2011 to address the challenge of achieving 20% of the sugar requirement of the country within two years by operating the two existing mills at their full capacities and resuming the operations of the two mills at Kantale and Hingurana which have been closed down due to their mismanagement.

This target can be achieved by introducing high-yielding sugarcane varieties to replace the existing inferior ones and new methods of crop management discovered by SRI.

During the last few years, there was a trend of moving farmers for more lucrative crops. The program undertaken by SRI for increasing farmers' knowledge and introduction of novel methods made possible retaining some farmers with the sugarcane cultivation by building their confidence with the industry.

SRI conducted programs to identify and control pests and diseases in sugarcane plantations. It was possible to build the confidence in SRI by controlling sugarcane woolly aphid which devastated sugarcane plantations in Passara area.

Though SRI is equipped with the required scientific instruments/equipment for its laboratories, it has been difficult to obtain services of the experienced and trained scientists regularly due to its remote location. The Governors of the Institute was able to retain at least few such scientists who are interested in sugarcane research at great difficulties. The other obstacle for conducting research is the need for supplying services from Colombo.

Sri Lanka has produced about 850 t of sugarcane jaggery in 2010, which is not sufficient to meet the demand. Steps have been taken to produce high-quality jaggery by the trade name “*Ran Ket*” before the end of 2011. Since jaggery production is more profitable, to ensure cane supply to sugar mills, it should be encouraged only in distant areas to Pelwatte and Sevanagala mills.

During the year 2010, SRI paid more attention on research to produce varieties which are suitable for different growing areas, giving high cane and sugar yields and resistant to pests and diseases, develop improved crop management practices including soil fertility management, control of pests and diseases, produce small-scale farm machinery had develop technologies to utilise sugar industry by-products and for product diversification.



S. K. Cyril
Chairman

Director's Report

The Sugarcane Research Institute which was established in 1984 by the Act No.75 of 1981 in order to promote the sugar industry through development and dissemination of technology continued its services for the 27th year. The year 2010 was an important year for the Sugarcane Research Institute as its administration was transferred to three Ministries (from Ministry of Supplementary Plantation Crops Development to Ministry of Plantation Industries in May 2010, from Ministry of Plantation Industries to Ministry of Minor Export Crop Promotion in November 2010).

The 2010 research programme was focused on the directions of increasing productivity, lowering the cost of production, facilitation other income avenues for growers.

Under the research programmes for increasing the productivity, three superior sugarcane varieties; SL 95 4430, SL 96 061 and SL 96 128 were evaluated under large-scale plantation conditions at Pelwatte. These three varieties will be available for commercial cultivation in 2011. Large-scale plantations of three more new superior sugarcane varieties; SL 95 4432, SL 95 4433 and SL 96 328 were also established for large-scale evaluations prior to release. The crop management experiments revealed that mulching can significantly increased cane yield of plant crop. Further the findings of research highlighted the operations; stubble shaving, fertilization and gap filling enhanced ratoon crop yield while stubble shaving was important in late ratoons to reduce stalk mortality.

The investigations planned for lowering the cost of production through application of High Grade Eppawala Rock Phosphate (HERP) instead of Triple Super Phosphate (TSP) revealed that there is no significant difference between cane and sugar yields of cane crops applied with HERP and Triple Super Phosphate (TSP). The Woolly Aphid Management programme of the institute through distribution of laboratory reared predator *Dipha aphidivora* was continued during the cause of the period successfully controlling the pest in the field.

The institute was able to assist the sugar industry productively through its technology transfer programme. The activities included; the sugarcane variety popularization through demonstration in the multiplication plots established in Pelwatte, Siyambalanduwa, Hingurana and Passara areas, machinery popularization through field demonstration of tyne cultivator and/or disc ratooner, training programmes on weed management and fertilizer management and training of new farmers on sugarcane cultivation.

The development activities of the institute mainly included expansion of sugarcane cultivation for jaggery and syrup industries in non sugarcane growing areas and

rehabilitation of woolly aphid affected plantations in Passara area, Expansion of sugarcane cultivation under coconut plantations in Mahayaya estate and Bingiriya in Kurunegala district through production and supply of seed cane to new growers commenced during the cause of the year. In addition to the support through supply of seed cane, inter-cropping planting materials, machinery and financial assistance through Central Bank of Sri Lanka, International Fund for Agriculture Development (IFAD), etc. For farmers in present sugarcane growing areas of Buttala, Badalkumbura, Siyambalanduwa and Wellawaya areas, special programmes fore-commencement of plantations with high yielding sugarcane varieties were commenced in the Gal-Oya project area. The woolly aphid-affected sugarcane plantations in Passara and Badulla area were rehabilitate through supply of new seed cane material, technical know-how and necessary financial assistance from Central Bank of Sri Lanka, International Fund for Agriculture Development (IFAD) etc.

The institute was able to establish links with the sugar sector organizations in Australia, Cuba and Thailand during the cause of the year in order to promote the sugar sector in Sri Lanka. Accordingly, a team of delegation of Thai Sugar Millers Association visited Sri Lanka to facilitate the proposed exchange programmes. The germplasm collection of the institute was further strengthening by incorporating 59 new varieties received from Pakistan during the same year.

The staff cadre and the scheme of recruitment of the institute were approved by the Department of Management Services on recommendations of the Salaries and Cadre Commission during the year 2010, enabling the institute to fill the vacancies in the cadre which hindered the progress of the research and developmental activities during the past period. Two new vehicles; a crew cab and a passenger bus were purchased and two new buildings were acquired by the institute from the Building Department after completion.



Dr. N. C. Kumarasinghe

Director/CEO

DIVISIONAL REPORTS

Plant Breeding Division



Staff

Mr A Wijesuriya BSc (Agric.), MPhil	Principal Research Officer and Head
Ms A M M S Perera BSc	Research Officer
Ms D Manel BSc (Agric.), MSc	Research Officer
Mr R W M S Rajapkshe	Technical Officer (up to 30.09.10)
Ms A L C Kumari	Technical Officer
Mr D Weerasinghe	Technical Officer
Ms L D D P Gunaratne Diploma (Agric.)	Technical Officer
Mr W G M J Perera	Lab/Field Attendant
Mr S H Karunaratne	Lab/Field Attendant

Research Highlights

- Identification of six new improved sugarcane varieties of 1995 and 1996 series for commercial release.
- Identification of three superior varieties from 1997 series for further evaluations.
- Identification of seven high-yielding varieties of 1998 series for multiplication.
- Selection of thirty eight promising varieties from 2002 series.
- Establishment of a new block saccharum germplasm at Enselwatte, Deniyaya.
- Making a total of 1512 crosses.
- Enrichment of the sugarcane germplasm collection with local and exotic varieties.
- Production of disease-free planting material for Sevanagala and Hingurana sugar companies by mericlone.
- Proving the mericlone protocol used in SRI for eliminating systemic viral pathogens in sugarcane.

Achievements in Brief**Identification of varieties for commercial release**

Six new improved sugarcane varieties of 1995 and 1996 series, namely, SL 95 4430, SL 95 4433, SL 95 4443, SL 96 061, SL 96 128 and SL 96 328 were identified as candidate varieties for proposing to the varietal release committee for official release in 2011 for commercial cultivation.

Identification of superior varieties of 1997 series

Three superior varieties, SL 97 1118, SL 97 1239 and SL 97 1442 were selected based on the plant and ratoon 1 crop data of Replicated Yield Trials (RYT). These varieties

were multiplied to obtain planting materials for subsequent testing under commercial conditions and released to the agronomist for maturity testing experiments.

Identification of superior varieties from 1998 series

Based on the results of plant crop and ratoon 1 crop of RYT_s at Uda Walawe and Pelwatte, seven high-yielding varieties, namely, SL 98 2087, SL 98 2118, SL 98 2524, SL 98 2535, SL 98 2549, SLT 4920 and SLT 4921 were selected and multiplied for subsequent testing prior to commercial release.

Selection of promising varieties in 2002 series

Thirty three (33) superior varieties were selected from the two PYT_s (Preliminary Yield Trials) that were established at Uda Walawe (under irrigation) and Pelwatte (under rain-fed) using 167 superior genotypes and 20 tissue culture sub clones of 2002 series. Seed multiplication plots of these varieties were established for subsequent RYT.

Establishment of new blocks of sugarcane germplasm at Enselwatte

New blocks of *ex-situ* Saccharum Germplasm consisting of 1,208 accessions from local and exotic sources were established at the Sugarcane Breeding Substation at Enselwatte, Deniyaya.

Crossing

A full-scale crossing program was undertaken during 2010 crossing season using field lantern and solution crossing techniques at the Sugarcane Breeding Sub-station at Enselwatte. A total of 1,512 crosses was made. Field lantern crossing technique was used in performing 659 bi-parental crosses. Seven hundred and seventy three (773) bi-parental crosses were affected using solution crossing technique. A total of 80 poly-crosses was made using the solution crossing technique.

Enrichment of germplasm collection

Twenty nine distinct types of local *Saccharum* cultivars brought to Colombo from various parts of the country were collected from vendors in Colombo during Taipongal festive season. The accessions were named from SLC 10 01 to SLC 10 29 and were planted in the Sugarcane Breeding Sub-station at Enselwatte.

Fifty nine commercial/near-commercial sugarcane varieties were imported from Pakistan under the germplasm exchange programme of Sri Lanka-Pakistan collaborative research project on sugarcane crop improvement. Germination of the 32 commercial varieties imported earlier under the same research project was failed. All these varieties were subjected to quarantine at Hantane.

Production of mericlone planting material

Mericlones of commercial and near-commercial sugarcane varieties were produced and supplied to Sevanagala Sugar Industries Ltd. (4,511 plants) and Gal-Oya Plantations Ltd. (3,093 plants) for the establishment of disease-free primary seedcane nurseries. Another 2,450 plants were produced through Lateral Shoot Multiplication (LSM) technique in poly-tunnel from the varieties which exhibited low multiplication rate in meristem culture.

Elimination of systemic viral pathogens through mericlone

It was proved that sugarcane *in-vitro* culture techniques can be successfully adopted for efficient regeneration of SCBV (sugarcane bacilliform virus)-free plant stocks through apical meristematic tissues. Ex-plant size less than 1.5 mm was found to be optimal for virus elimination and the sizes between 1 and 1.5mm were for optimal germination and regeneration.

Agronomy Division



Staff

Dr W R G Witharama	Principal Research Officer and Head
BSc (Agric.), MPhil., PhD	
Mr A L C De Silva	Senior Research Officer
BSc (Agric.), MPhil.	
Mr W G Nimal	Technical Officer
Mr P B G S Sandanayake	Technical Officer
Diploma (Agric.)	

Research Highlights

- Identification of better ratooning varieties of 1990, 1992 and 1993 series.
- Identification of the maturity patterns of near-commercial varieties of 1995 and 1996 series.
- Confirmation that the depth of ploughing does not have an impact on the performance of sugarcane crop.
- Identification of the effects of stubble shaving, fertilisation and gap filling on ratoon crop performance.
- Confirmation of the possibility of improving unproductive sugarcane lands by mulching with gliricidia.
- Confirmation of the feasibility of adopting spaced transplanting (STP) under rain-fed conditions and the possibility of taking single-budded nodes from the cane tops for STP nurseries.
- Establishment of a sugarcane nursery in Kilinochchi.

Achievements in Brief

Ratooning ability of commercial/near-commercial varieties

It was found that the SL 92 4918 and SL 93 945 are better ratooning varieties under irrigation while the variety SL 90 6237 showed higher ratooning ability under both irrigated and rain-fed conditions than Co 775.

Maturity patterns of 1995 and 1996 series near-commercial varieties

The maturity pattern of new near-commercial sugarcane varieties (SL 95 4030, SL 95 4120, SL 95 4226, SL 95 4421, SL 95 4425, SL 95 4430, SL 95 4432, SL 95 4443, SL 96 061, SL 96 128, SL 96 175, SL 96 234, SL 96 278, SL 96 328, SL 96 347, and SL 96 771) was found to be similar to that of Co 775. All varieties attain peak maturity at 11 – 12 months and keep this level until 16 – 17 months after planting.

Effect of depth of land preparation on growth and yield of sugarcane

It was found that medium and deep ploughing ameliorated stress due to drought and helped for a better initial crop growth than no tillage and minimum tillage treatments. However, millable stalks number and cane yield at harvest did not show significant difference between different depths of ploughing both in plant and ratoon I.

Effect of selected initial ratoon management practices on cane yield

In a study conducted to find out the effect of stubble shaving, fertilisation and gap filling on growth, performance and ratoon yield indicated that all these management practices were important to increase ratoon yield. Out of these, fertiliser application was significant in increasing cane yield from the first ratoon crop. Gap filling operation contributed to increase cane yield significantly from second ratoon crop. Stubble shaving has a significant effect on increasing cane yield by reducing stalks mortality in late ratoon crops.

Effects of mulching gliricidia on improving productivity of degraded sugarcane lands

Mulching plant crop significantly increased cane yield compared to un-mulched and unfertilised crop. The mulched plant crop recorded the highest cane yield in fertilised crop. Thus, mulching plant crop enhances the productivity of sugarcane lands under rain-fed conditions.

Spaced transplanting

Sugarcane tops left behind after harvesting were found to be preferred to mature stalks to take single-budded nodes for establishing nurseries to obtain seedlings for STP. Significantly higher average number of seedlings could be obtained by planting the sets separated from cane tops than from mature stalks. The apex of the cane tops were not suitable for planting the nursery as seedlings obtained from such tender buds were weaker. The plants obtained from a 4-week old nursery were found to be the best for transplanting.

Sugarcane nursery at Kilinochchi

A 0.4-ha sugarcane nursery with the variety SL 83 06 was established and maintained in the research farm of the Regional Agricultural Research Centre of Kilinochchi. In addition, about 0.1 ha multiplication plot of sugarcane varieties SL 71 30, SL 88 116, and M 438/59 was established for multiplication to establish a varietal adaptability trial.

Chemistry Division



Staff

Mr. H. A. S. Weerasinghe B.Sc.	Research Officer-in-Charge (from 01.12.2010)
Ms. T. P. Liyanage BSc	Research Officer-in-Charge (up to 09.09.2010)
Ms. A. B. G. C. J. DE Silva B.Sc. (Eng.)	Research Officer (up to 24.02.2010)
Mr. A. P. J. Mohotti	Technical Officer
Mr. G. S. Udawatte	Technical Officer
Mr. J. Gunasiri	Lab/Field Attendant
Mr. P. W. D. Kulatunga	Lab/Field Attendant

Research Highlights

- Confirmation that high-grade Eppawala rock phosphate application has no significant effect on cane yield.
- Revision of fertiliser recommendations for Hingurana soils.

Analytical Services

- Analysis of two thousand five hundred cane samples received from breeding and agronomy divisions for Brix, Pol and fibre contents.

Achievements in Brief

High-grade Eppawala rock phosphate (HERP) as a P source for sugarcane

The results of the trial up to the second ratoon crop did not show a significant improvement in cane yield by application of HERP.

New fertiliser recommendation for Hingurana

The fertiliser requirements for sugarcane-growing soils at Hingurana, namely, alluvial, non-calcic brown and reddish brown earth soils were revised based on nutrient removal and yield goal approaches.

Analytical Services

Analytical services were provided for all research divisions of the SRI by analysing 2500 cane samples for Brix, Pol and fibre contents.

Pest Management Division



Staff

Ms. V. K. A. S. M. Wanasinghe BSc

Research Officer-in-Charge

Mr. M. K. D. Ubesena

Technical Officer

Research Highlights

- The following were discovered on the ecology and biology of Sugarcane Woolly Aphid (SWA) and its natural enemies:
 - i. Uneven distribution of Sugarcane Woolly Aphid (SWA) within a sugarcane plant.
 - ii. Higher level of damage in middle leaves than in upper and lower leaves.
 - iii. Preference of greyish green colour leaves for colonising SWA.
 - iv. More active feeding of the late larval instars of *Dipha aphidivora* (the dominant predator of SWA) during evening hours.
 - v. Most suitability of the three-hour starved larvae of *Dipha aphidivora* for field release for SWA control.
 - vi. Formation of cocoon of the *Dipha aphidivora* inside leaf sheaths.
- Identification of a potential syrphids fly predator of SWA in sugarcane plantations with high SWA infestation at Kahataruppa.
- Recommendation of Cruiser WG (Thiamethoxam 70%) for control of termites in sugarcane plantations.
- Quarantine of the imported sugarcane varieties.

Services

- Providing services required for pest management in sugarcane plantations.

Achievements in Brief

Ecology and Biology of SWA and its natural enemies

Sugarcane woolly aphid *Ceratovacuna lanigera* Zehntner (Hemiptera: Aphididae), a serious pest, was found to be not evenly distributed within the sugarcane plant. The middle leaves of the plant were prone more to the pest attack than upper and lower leaves.

SWA preferred leaves with greyish green colour spots to yellowish green colour spots for their colonising. Also, a higher population of SWA was found on middle leaves which are greyish green in colour than upper and lower leaves.

The late larval instars of *Dipha aphidivora* Meyrick (Lepidoptera: Pyralidae), a natural predator of SWA, were active feeders during evening hours in the natural environment. Three-hour starved larvae were found to be the most active feeders, and hence, most suitable for release to plantations for SWA control.

The fifth instar larvae were not much interested in feeding, and they tended to move towards the leaf sheath and initiate the pupation inside leaf sheaths.

Identification of natural predators in SWA-infested plantations in Badulla district

Several indigenous predators of SWA, including pyralids, coccinelids, neuropterans and syrphids, were found in recent surveys in the SWA-affected sugarcane plantations in Badulla district. Among them, a potential syrphid fly predator which was not available in other sugarcane-growing areas was observed.

Recommendation for chemical control of termites

Cruiser WG (Thiamethoxam 70%) at the rate of 1g/L was recommended for sett treatment for controlling sugarcane termites. For treatment, seed setts should be dipped, before planting, in Crusier twice for 15 minutes at 15-minute intervals.

Quarantine of imported varieties

Two consignments, one containing 32 varieties and the other with 59 varieties imported from Pakistan were examined for pests. Six varieties in the first consignment were suspected to have pest attacks. They were, along with their packing material, were destroyed.

Pest Management Services

Laboratory cultures of natural enemies of SWA, *Dipha aphidivora* and *Micromus igorotus*, were maintained and released to the SWA-infested plantations as shown below:

Location	Number	
	<i>Dipha</i> Cocoons	<i>Micromus</i> larvae
Passara	2500	0
Buttala	2800	575
Sevanagala	2500	680
Hingurana	650	750

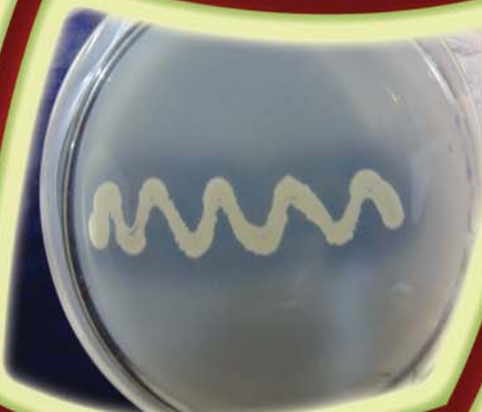
A high infestation of SWA was observed during January – March in all commercial sugarcane plantations, and hence, necessary recommendations were given to sugar-manufacturing companies to contain the spread of the pest.

Instructions were given to all sugar-manufacturing companies for initiation of laboratory cultures of *Dipha aphidivora* and *Micromus igorotus* and for mass rearing of *Dipha aphidivora* and *Micromus igorotus* in shade net houses.

Necessary recommendations were given to control the mite infestations in seedcane nurseries at Pelwatte after inspecting the infested fields.

Farmer awareness programmes on SWA were conducted in Buttala and Passara areas.

Microbiology and By-Products Division



Staff

Ms. M. K. R. Silva BSc (Agric.), MSc	Research Officer-in-Charge
Ms. A. N. W. S. Thushari BSc	Research Officer
Ms. W. M. P. Weerakkody BSc	Research Officer
Mr. R. A. Premachandera	Technical Officer
Ms. W. M. N. S. Kumari	Technical Officer (from 08.04.2010)
Mr. M. R. Premalal	Lab/Field Attendant
Mr. D. M. T. Piyaratne	Field Attendant

Research Highlights

- Screening of new varieties for resistance to major diseases.
- Quarantine of varieties imported from Pakistan.
- Isolation of nitrogen-fixing bacterial species associated with sugarcane roots and stems.
- Isolation of nine yeast strains.
- Isolation of six phosphate-solubilising bacteria.

Achievements in Brief**Screening for diseases**

One hundred and twenty five varieties of 2002 series, seventy four varieties of 2003 series and 11 varieties imported from Brazil were screened for smut and leaf scald diseases.

New smut and leaf scald screening trials of 102 varieties of 2004 series and 28 varieties of 2004 tissue culture sub-clones were established. Furthermore, new screening trials were established for 17 varieties of 1995, 1996, 2002 and 2003 series for which smut screening results were not available. New screening trials were established for 10 varieties of 1994, 1995 and 2003 series for which screening results for leaf scald disease were not available

Disease screening trials of 1999 series and some selected varieties (01 variety from 1989, 05 varieties from 1995, 02 varieties from 1996, 02 varieties from 1997, 05 varieties from 1998, 02 varieties from 2002 and 02 tissue culture sub clones) of which white leaf disease screening data were not available were established.

Disease screening trial 25 varieties from 2000/2001 series was established.

Quarantine of sugarcane varieties

Thirty three varieties imported from Pakistan were planted at the quarantine station for observations for diseases. However, due to the bad condition of the consignment, only two varieties germinated. Another 59 varieties were received from Pakistan in December and established at the quarantine station for observation.

Isolation of nitrogen-fixing bacteria associated with sugarcane

Nitrogen-fixing bacteria from two sugarcane varieties from Siyambalanduwa sub station and Uda Walawe Research Farm was isolated. Classification of the isolated bacterial species is being carried out. Thirteen cultures of the isolated species were maintained in Potato Agar medium.

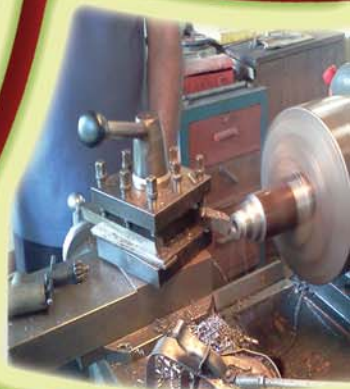
Isolation of yeast strains

Nine yeast isolates were obtained from the samples of bagasse, molasses, press mud and spent wash were collected from Pelwatte factory and distillery.

Isolation of phosphate-solubilising bacteria

Six bacterial species capable of solubilising phosphate were isolated from samples of bagasse, molasses, press mud, and spent wash which were collected from the sugar factory and distillery site at Pelwatte. The phosphate-solubilising ability of each isolate was estimated visually.

Engineering Division



Staff

Mr. K. H. D. Abeyratne BSc (Agric.)	Research Officer-In-Charge
Mr. L. M. J. R. Wijewardene BSc (Agric.)	Research Officer
Mr. A. S. M. A. Fernando	Technical Officer
Mr. W. M. Anurapala	Technical Officer
Mr. V. Abeygunawardane	Welder
Mr. G. Ariyaratne	Fitter
Mr. W. A. Premachandra	Blacksmith
Mr. M. B. Rohan	Lab/Field Attendant
Mr. D. M. Weerasiri	Lab/Field Attendant

Research Highlights

Machinery

- Design and construction of prototypes of the two-wheel tractor-mounted fertiliser applicator.

Water Management

- Harvesting of runoff water for supplementary irrigation for sugarcane farming.
- Development of convenient sprinkler system for sugarcane farms of Sri Lanka.
- Analysis of agro-meteorological data for the year 2010.

Services

- Provision of machinery services required for other research divisions.

Achievements in Brief

Development of two-wheel tractor-mounted fertiliser applicator

A fertiliser dropping rate adjustable unit was successfully fabricated for the fertiliser applicator. This implement has the following features:

- i. A unit which automatically adjusts fertiliser dropping rate with the speed of the tractor.
- ii. Easy operating gear system to change to specific fertiliser dropping rates.
- iii. Low weight (one person can mount it on two-wheel tractor).
- iv. A fertiliser container with capacity sufficient for 140 m linear distance for two furrows at the dropping rates of 523kg/ha.

Run-off water harvesting in Sevanagala area

A run-off water harvester with a capacity of 125 to 150 m³ was found to be the possible size for Sevanagala area. Groundwater of the low-lying areas of farmer fields was found to be another potential water source for practising deficit irrigations. The productivity and practicality of irrigation practices could be increased by incorporating runoff water harvester and agro wells concurrently than their individual use. It was clearly noticed that the groundwater table fluctuates between 50 - 350 cm during the

wet season and the dry seasons in Sevanagala rain-fed area. Agro wells recovered within 3 to 7 days. The groundwater availability was also much high in Sevanagala rain-fed area, even during droughts.

Development of a convenient sprinkler system

A sprinkler system consisting of a two-wheel tractor engine, hose reel connected to a sprinkler head and a cart (trailer) was constructed. Field evaluation of the cart (trailer) was conducted and some failures in connection with the field stability were identified. Accordingly, the main structure of the cart was changed. The total sprinkler system has 15-17% pressure drop due to internal surface resistance and spiral bending of alkathene pipe when operating at full capacity. Necessary modifications are being made.

Agro-meteorology

Rainfall: Total annual rainfall experienced during the year 2010 at Uda Walawe, Sevanagala, Pelwatte and Siyambalanduwa were 1586.4mm, 1431.4mm, 1650.5mm and 1819.8mm respectively. All the stations, except Hingurana, have reported the maximum precipitation during the month of November at the rate of 443.8mm (Uda Walawe), 426.8mm (Sevanagala), 506mm (Pelwatte) and 449.5mm (Siyambalanduwa). The highest precipitation at Hingurana experienced during December (415.4mm). During the last quarter, 924.4 mm (58.2%), 791mm (55.2%), 750mm (45.4%) and 781.6mm (45.9%) have been received at Uda Walawe, Sevanagala, Pelwatte and Siyambalanduwa respectively. The amount of rainfall received in all locations satisfactorily fulfilled the crop water requirement, but the distribution pattern was poor.

Evaporation: Annual total pan evaporation of the year 2010 at Uda Walawe, Sevanagala and Pelwatte was 1676.8mm, 1499.04mm and 1452.0mm respectively. However, the calculated ET_{crop} values were 1216.7mm, 1079.0mm and 1752.1mm respectively. The highest evapo-transpiration level was observed in Pelwatte area, though there was a comparatively high annual rainfall of 1650.5mm during the year 2010. Reasons for this may be the extreme weather conditions, such as heavy rains and severe droughts occurred at Pelwatte.

The amount of evaporation (ET_0) and the rainfall received directly link with the nature of moisture condition of the particular month. In all 3 locations, both planting and harvesting seasons have experienced weather conditions required for sugarcane crop.

Bright sunshine hours/wind velocity/relative humidity: Bright sunshine hours per day in Uda Walawe, Sevanagala and Pelwatte area varied between 4 and 8 hours during the year 2010, and it reduced to 4 hrs in the month of December, 2010. This may be favourable for the spread of fungal diseases and the sugarcane woolly aphid in plantations. In general, the amount of solar radiation experienced during the year 2010 was enough for cane growth in all the three locations.

The wind velocity experienced during the 2nd dry spell from June to September at Uda Walawe and Sevanagala area was significantly high compared to that in Pelwatte area. The mature canes which are at the harvesting stage could be damaged by these heavy winds unless they were not harvested at correct time. This is very critical in Uda

Walawe and Sevanagala area than at Pelwatte. The relative humidity and the bright sunshine hours per day experienced during the year 2010 were within the acceptable range in all the three locations for sugarcane plant germination, growth and maturity.

Air temperature: March was the hottest month of the year 2010 in all three locations. The maximum temperature exceeding 35°C (the upper limit of optimal temperature range for normal photosynthesis rate) had in Uda Walawe, Pelwatte and Siyambalanduwa areas were 36.4, 35.3 and 36.6°C respectively during the month of March, 2010. In addition, in all the three locations, maximum variation of diurnal temperature (more suitable for sugar accumulation) had been experienced during the same month. As such, the first harvesting season from February to April was optimal for the cane harvesting than the 2nd harvesting season for sugar accumulation in the cane stalks. In general, the average atmospheric temperature was favourable to sugarcane growth during the year 2010.

Soil temperature: Average soil temperature at 5 cm depth in Uda Walawe and Sevanagala areas were 31.3°C ±1.6 and 31.8±1.3°C respectively. The soil temperature at the depth of 30cm where the maximum root density of sugarcane plant is found, were 30.4±1.9, 31.1±1.1 and 29.9±1.0 °C in Uda Walawe, Sevanagala and Pelwatte areas respectively. Generally, it can be concluded that all locations have experienced acceptable soil temperature level in respect of germination and root development of cane plant.

Predicted irrigation requirement for the year 2011

The annual crop water requirement of 1500mm is fulfilled by the rainfall in all the study areas.

The lowest irrigation requirement of 310.9mm was reported in Uda Walawe area. The maximum of 642.8 mm was observed in Pelwatte area though the rainfall was 1650.5 mm (> 1586.4mm at Uda Walawe). The reasons for that would be, Uda Walawe area has experienced well-distributed rainfall than the Pelwatte area during the year 2010.

Services for Research

- i. A mobile hot water treatment plant with the following features was constructed successfully:
Capacity: 0.2 t/hr
An automatic thermostat unit
Volume of water required- 1000L
Power requirement by 3-phase electricity (could be coupled to a mobile generator)
Labour requirement: 3 persons
- ii. Ten units of tyne cultivator were fabricated to be distributed among farmers.
- iii. Assistance was given to farm division in contour land preparation.
- iv. Electric fence was installed in the B5 area of the research farm for 2 km distance. In addition, repairs and regular maintenance of electric fence is carried out.

Economics, Biometry and Data Processing Division



Staff

Mr. K. A. D. Kodituwakku BSc (Agric.)	Research Officer-In-Charge
Dr. A. P. Keerthipala BSc (Agric.), MPhil. PhD	Principal Research Officer
Ms. B. D. S. K Ariyawansa BSc (Agric.)	Research Officer
Ms. M. G. Y. Madavi BSc	Technical Officer

Research Highlights

The following findings were highlighted:

- Higher profitability of paddy than sugarcane at Hingurana.
- Shortage of nearly 0.9 million man days of labour per year in Moneragala district.
- Change of climate in Sevanagala and Pelwatte areas during 1986-2009.
- Better adaptability of the SRI-developed sugarcane varieties.

Services

- Updating SRI web site.
- Analysis of experimental data for other divisions of SRI.

Achievements in Brief

Costs and returns of sugarcane cultivation at Hingurana

Net income of the plant crop of sugarcane with a yield of 70 t/ha was low due to its high cost of production (Rs 192,000/ha), but ratoon 1 crop (yield 65 t/ha and cost Rs 115,000/ha) generated a net income of Rs. 80,000/ha and the average net income of first two crops was about Rs. 49,000/ha.

The major competitive crop, paddy, generated a net income of Rs. 77,900/ha/year with fertiliser subsidy and the guaranteed price of paddy.

With the assumption of sugarcane plantation can maintain up to four ratoons with 5% yield reduction, profitability will be improved up to Rs. 59,600/ ha/year. Paddy was still more profitable than sugarcane. Benefit-cost ratio of both crops were very much similar and generated about 1.48 rupees per one rupee invested. Since the price of paddy was highly fluctuating, risk of cultivating paddy was higher than that of sugarcane, and hence farmers could be easily attracted to sugarcane by showing a stable future for the sugar industry at Hingurana.

Demand for and supply of labour in Moneragala district

Total agricultural labour availability in Moneragala district was about 17.34 million man days/year whereas the demand was 18.19 million man days/year. Thus, there was a shortage of nearly 0.9 million man days/year. Total annual labour requirement of sugarcane was considerably low (0.8 million mandays) compared to homesteads (6.2 million man days) plantation crops (4.9 million man days), paddy (2.9 million man days) and chena cultivations (2.4 million man days).

The variation of seasonal demand for labour indicated that the months of March, April, May, August, September, October and November had agricultural labour shortages. Land preparation, planting and harvesting operations of paddy, and cultivation of chena and homestead crops created the above shortage. Sugarcane harvesting and planting/ratooning operations take place during the above months, and hence those operations cannot be done properly and wage rates increased considerable.

Climate change in Sevanagala and Pelwatte sugarcane-growing areas during 1986-2009 period

Trend analysis revealed that, total number of rainy days at Sevanagala has been increasing at a rate of 1.5 days/year while maximum temperature, average temperature and evaporation/day showed a significant decreasing trend. At Pelwatte, rainfall and maximum temperature have been increasing at an annual rate of 15.03 mm and 0.037 °C respectively. Daily evaporation and sunshine hours, and wind velocity at Pelwatte showed a significant decreasing trend.

Sugarcane yield had a significant positive relationship with total annual rainfall, and it determined a 50% of the variation in cane yield at Sevanagala and 43% at Pelwatte. The mean annual rainfall $\pm$ standard error was 1400 $\pm$ 56 at Sevanagala while it was 1519 $\pm$ 49 at Pelwatte

The temperature regimes of July-September and January-March periods were desirable for cane maturity and ripening respectively for *maha*- and *yala*-planted crops in both locations. The results suggested that, higher difference between day and night temperatures observed during July-September was due to high maximum temperature, while higher difference for January, February and March was due to lower minimum temperatures in both locations. Hence, the temperature regimes of January, February and March were more favourable for sugar accumulation in the cane maturity and ripening periods in the two locations.

The results further revealed that sugarcane in Pelwatte area was grown at a near-maximum of the optimum temperature range. Thus, under the increasing trends of

maximum temperature, there can be adverse effects on cane and sugar yields at Pelwatte in future due to interference of physiological processes of the plant by increased temperatures during critical yield formation stages, increase of pest and disease incidences and weed infestations.

Therefore, future research has to focus on the development of sugarcane varieties which are better adaptable under high fluctuations of soil moisture conditions during the growing season and not sensitive to increased temperature during critical yield formation stages

Adaptability of new commercial sugarcane varieties

Six commercial sugarcane varieties, namely, Co 775, SL 83 06, SL 88 116, SL 89 1673, SL 92 4918 and SL 92 5588 were evaluated for the cane yield performance and the stability based on 13 plant crops and 9 ratoon I crops of trials conducted at Uda Walawe, Siyambalanduwa, Pelwatte, Sevanagala and Bibile.

The results indicated the following:

- i. SL 83 06 and SL 88 116 gave significantly higher yields than Co 775.
- ii. SL 83 06 was the most stable variety with general adaptability.
- iii. SL 83 06 had an ability of giving better yields in ratoon I crop. Ratoon crop of SL 83 06 was very responsive for favourable environments while giving above average yields in unfavourable environments.
- iv. Co 775 was a stable variety with general adaptability; however it gave average cane yields.
- v. SL 89 1673 was a generally adaptable variety, but it was less stable compared to SL 83 06 and Co 775.
- vi. Stability of SL 88 116 was low compared to SL 83 06 and Co 775. However, it was proven to be a high-yielding variety with general adaptability.
- vii. SL 92 4918 was a variety adaptable to favourable environments.
- viii. SL 92 5588 was a specifically adaptable variety to unfavourable environments.

Services

Maintenance and updating of SRI web site

The web site of SRI was restructured by modifying its homepage and appearance of the web pages.

Services to other divisions of SRI

The necessary support at the stage of designing, conducting and analysing data was given for the following projects of the respective divisions:

- i. PYTs and RYTs of the Breeding Division
- ii. “Assessment of sugarcane meristem culture protocol for virus elimination using serological techniques.” conducted by the Division of Plant Breeding
- iii. Research on “Ratoon management techniques” conducted by the Division of Agronomy
- iv. Research on “control of termites.” of the Division of Pest Management.
- v. The research project conducted by the student of university of Sabaragamuwa under the supervision of Pest Management Division
- vi. Trials conducted by Divisions of Chemistry, Microbiology and Engineering.
- vii. Research on “Spaced Planting Technique “

In addition, support services related to computer and IT-related activities to other divisions of SRI were provided.

Services to other organisations

INFORM database

The information required for the preparation of INFORM database of SRI for the year 2010 was collected and the INFORM database and the INFORM budget for the year 2010 were submitted to the Council for Agricultural Research Policy (CARP) to be included in the national database, which is maintained and updated by the CARP.

Training

A student from Vocational Training Authority (VTA) Hingure Ara, Embilipitiya, was trained on the use of computer software packages for a period of six months.

Extension and Training Division



தொழில் நுட்ப அமைதி

உள் சர்க்கேஷன் துறைகள்
கரும்பு ஆராய்ச்சி நிறுவனம்

உள் விலா கம்பெனின் கிராம
பண்பாடு கார்ட்டை

தொழில் நுட்ப அமைதி :

உள் சர்க்கேஷன் துறைகள்,
கரும்பு ஆராய்ச்சி நிறுவனம்,
தொழில் நுட்ப அமைதி

தொழில் நுட்ப அமைதி,
கரும்பு ஆராய்ச்சி நிறுவனம்,
தொழில் நுட்ப அமைதி

தொழில் நுட்ப அமைதி,
கரும்பு ஆராய்ச்சி நிறுவனம்,
தொழில் நுட்ப அமைதி

தொழில் நுட்ப அமைதி, கரும்பு ஆராய்ச்சி நிறுவனம், தொழில் நுட்ப அமைதி



Staff

Mr. M. S. Perera BSc (Agric.), MPhil	Principal Research Officer and Head
Mr. D. P. W. Pottawela B.Sc. (Agric.), PG.Dip (BA)	Technology Transfer Officer
Mr. R. A. P. A. Ranatunga, HND (Agric.)	Development Officer
Mr. K. P. Wickremasinghe BSc (Agric.)	Development Officer
Mr. S. N. Wickremasinghe BSc (Agric.), MSc	Development Officer
Mr. W. G. M. S. Weragoda BSc (Agric.)	Development Officer
Mr. D. P. Ubayawarna	Lab/Field Attendant

Highlights

Extension and training

- Conducting three training programmes/demonstrations for farmers/officers.

Production of extension literature

- Preparation of twenty posters and a leaflet and drafting two bulletins.

Development activities

- Carrying out activities on the following:
- Sugarcane variety promotion
- Promotion of tyne cultivator and furrow opener
- SWA control
- Intercropping with sugarcane
- Promotion of jaggery production.

Participation in exhibition and other activities

- *Deyata Kirula* exhibition
- Provision of extension services requested by other organisations/individuals

Achievements in Brief

Extension and training

The following three programmes were conducted to educate farmers/sugar industry officials on latest SRI technologies on sugarcane farming:

- i. One-day training for 30 farmers from Hingurana on sugarcane cultivation and new technologies developed by SRI.
- ii. Training on weed management and fertiliser management for 312 farmers at Pelwatte, and 16 farmers at Hingurana.

- iii. Training of students on sugarcane cultivation; 150 students of Uda Walawe Maha Vidyalaya on implements, 125 students of Siyambalanduwa Maha Vidyalaya, 30 students of Muthuminigama Vidyalaya, and 33 student of 3rd stage school (Muthukandiya), and 26 students from small fisheries organisation at Siyambalanduwa.

Extension teaching aids

- i. Twenty educational posters on sugarcane cultivation were prepared.
- ii. A leaflet on sugarcane nursery management was drafted.
- iii. Two bulletins on pest and disease management were drafted.

Promotion of new sugarcane varieties

Establishment and/or maintenance of the nurseries of new sugarcane varieties:

- i. A1-ha seedcane nursery of SL 83 06 at Mahayaya estate, Kurunegala.
- ii. Seven seedcane nurseries of SL 83 06 (0.4 ha each) in farmer fields at Makandura area.
- iii. Seventeen seedcane nurseries with the variety SL 83 06 (0.2 ha each) in Passara DS division.
- iv. A 0.2-ha nursery of SL 92 5588 at Wallawaya and 1.25 ha of SL 83 06 at Pelwatte.
- v. A 1.6-ha demonstration and multiplication plots of SL 92 5588 at Pelwatte.
- vi. A 0.4-ha multiplication/demonstration field of SL 83 06 at Siyambalanduwa.
- vii. Seedcane nurseries of SL 83 06 at Kodayana (0.4 ha), Madugama (0.4 ha), and Mahakalugolla (2 ha).
- viii. A 1-ha demonstration/nursery plot of commercial sugarcane varieties SL 92 4918, SL 92 4997, and SLI 121 in Gal Maduwa using seedcane obtained from the demonstration field established in 2009 and a 0.6 ha multiplication/demonstration field of SL 83 06 at Hingurana.
- ix. The 1st Ratoon of previously-established demonstration plot (0.4 ha) of new cane varieties; SL 83 06, SL 88 116, SL 86 13, SLI 121, SL 92 5588, SL 89 1673, SL 92 4917, SL 92 4997, SLT 88 238, NCO 339, SL 71 03, SL 71 30, M438 59, Co 775, and Helamula.

Sugarcane variety demonstrations:

- i. Three demonstration sessions on SL 92 5588 were conducted with the participation of 42 farmers and field officers at Pelwatte.
- ii. The nurseries at Siyambalanduwa were demonstrated to 40 farmers of the area.
- iii. Nurseries at Hingurana were demonstrated to 11 farmers.

Supply of seed material:

- i. Seventy eight tones (78 t) of SL 83 06 seedcane from the nursery at Pelwatte was provided to 08 farmers to establish their cultivations during Maha 2011.
- ii. Thirty (30) tonnes of seedcane harvested from the nurseries at Siyambalanduwa were provided to three farmers for further multiplication in 2010.
- iii. Five farmers were provided with 20t of seedcane from the plant crop of the nursery at Hingurana to establish 07 multiplication plots; SL 92 4918 (0.4ha), SL 92 4997 (0.75 ha), and SLI 121 (1 ha).

Promotion of SRI-developed machinery

- i. A field demonstration of tyne cultivator and disc ratooner was conducted for 38 farmers at Kodayana
- ii. Two demonstrations (37 farmers) on Tyne cultivator at Thelulla and Handapanagala were conducted.
- iii. Arrangements were made to distribute two Tyne cultivators among farmer organisations at Pelwatte.

SWA control

- i. A one-day training programme on SWA for 28 field officers and farmers in Pelwatte area was conducted and 400 field visits were made to give instruction for SWA control.
- ii. Field inspection of SWA in Zones 4 and 5 of Pelwatte was carried out.

Intercropping

The following activities were done:

- i. Field demonstration of intercropping cucumber with sugarcane for 28 farmers at Badalkumbura.
- ii. A one-day training programme on intercropping with sugarcane for 32 farmers at Sevanagala.
- iii. Establishment 16 demonstration plots of intercropping of green gram and cucumber with sugarcane at Buttala and 0.6 ha field with green gram at Hingurana and its demonstration to field officers of the Gal Oya Plantations Ltd.
- iv. Coordination of programme with the Department of Agriculture on green gram intercropping with sugarcane and distribution of 100Kg of green gram seeds among farmers at Pelwatte and monitoring their field maintenance.

Promotion of jaggery production in Passara and Moneragala areas

The following activities were done:

Passara:

- i. About 2.4 ha of nurseries were established in farmers' fields at Passara by providing seedcane; 11t of SL 83 06 and 05t of SL 92 5588 and fertiliser by SRI.
- ii. Sugarcane cultivations of about 30 ha were established by using the seedcane from previously-established farmer nurseries/multiplication fields at Passara.
- iii. Seventy five farmers at Passara and Soranatota DS divisions were trained on sugarcane farming and focus group discussions were conducted with farmer organisations to study their needs and initiating the development program.
- iv. Financial assistance for sugarcane cultivation and jaggery production was provided by coordination with the Central Bank of Sri Lanka and relevant government and non-governmental organisations in the area.

Moneragala:

Two training sessions on jaggery production and two sessions on rehabilitation and improvement of jaggery processing units (in collaboration with Industrial Development Board) for a group of small millers (35 millers) in Moneragala district were conducted.

Other activities

- i. An educational exhibition stall was run on sugarcane at the *Deyata Kirula* exhibition at Pallekele.
- ii. A one-day training programme on cane cultivation for 60 farmers at Sevanagala Sugar Industries Ltd. was organised in collaboration with Ministry of Supplementary Plantation Crop Development
- iii. A one-day training session was conducted for sixty extension officers of the Pelwatte Sugar Industries (PSI) Ltd. on extension and communication in the "Training of trainers programme" organised by PSI.
- iv. A demonstration programme on sugarcane cultivation and jaggery production was conducted at Mahayaya estate with the participation of 15 farmers and officers from Bingiriya area. To initiate sugarcane cultivation, seedcane was provided from the nursery field of Mahayaya estate to establish a 1.2 ha nursery in Bingiriya.
- v. A 0.6 ha demonstration field of sugarcane was established at Kandakaduwa Farm (Welikanda) by providing seedcane, fertiliser, agro chemicals and technical guidance.
- vi. Two batches of students from Sabaragamuwa University were trained on sugarcane on sugarcane
- vii. Participation in "*Jangama seva*" programmes (*Deyata Kirula*) held at Badulla Maha Vidyalaya, Badalkumbura Maha Vidyalaya, Kiriibbanara Maha Vidyalaya, Siyambalanduwa Maha Vidyalaya and Kiriweva Bandaranayake Vidyalaya

Research Farm



Staff

Mr. K. A. Ariyaratne

Farm Superintendent

Mr. W. A. U. Priyantha

Technical Officer

Mr. M. S. N. Wijesiri

Field Attendant

Highlights

- Preparation of about twenty hectares of land for field trials.
- Provision of sixty three tonnes of hot-water treated seedcane to Extension and Training Division.
- Establishment of one ha nursery of SL 83 06 and SL 92 5588.
- Supply of fifty seven tonnes of cane to Sevanagala sugar factory.
- Production of six hundred and seventy kg of jaggery and 120 l of syrup from cane harvested from field trials.
- Provision of all services required for field trials of research divisions.

Achievements in Brief**Land Preparation**

A total of 20 ha of lands were prepared for field trials of the research divisions.

Production of hot-water treated seedcane

Sixty three tonnes of hot-water treated seedcane was provided to the Extension and Training Division for multiplication in Passara, Siyambalanduwa, Pelwatte and Hingurana areas for the Weli Oya army camp. A nursery of 01 ha was established with the varieties SL 83 06 and SL 92 5588.

Harvesting of sugarcane in concluded field trials

A total of 57 tonnes of cane were harvested from the completed field experiments and sold to Sevanagala factory.

Other services

Construction of an electric fences and a farm road and the maintenance of electric fence, farm roads and irrigation canals were carried out.

Administration and Finance Division



Staff

Dr. N. C. Kumarasinghe BSc, MSc, PhD
FRES (UK), FIBiol, FAASN, Chartered Biologist

Director/Chief Executive

Mr. D. G. Manamudali
BA (Econ.), LICA

Deputy Director
(Administration & Finance)

Dr.A P. Keerthipala BSc (Agriculture),
MPhil, PhD

Actg. Deputy Director
(Research & Technology Transfer)

Administration staff

Dr. C. Eritawala PhD (Moscow)

Administrative Officer

Mr. N. G. A. L. P. Nanayakkara
BSc Mgt. (Pub)

Administrative Officer

Ms. T. A. D. M. G. Jayathilaka

Management Assistant
(Clerical & Typing)

Ms. J. K. Chandralatha

Management Assistant
(Clerical & Typing)

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Management Assistant
(Clerical & Typing)

Ms. M. M. I. M. K Manikkadawara

Management Assistant
(Clerical & Typing)

Mr. G. Somaweera

Management Assistant
(Clerical & Typing)

Ms M. A.R. Samarasekara

Management Assistant
(Clerical & Typing)

Ms. O. U. Subasinghe

Management Assistant
(Clerical & Typing)

Mr. S. B. N. U. S. Wimalasooriya

Driver

Mr. A. Vithana

Driver

Mr. Austin Perera.

Driver

Mr. A.W. K. Hettiarchchi

Driver

Mr. S. L. Peris

Driver

Mr. H. A. U. S. Pamarathna

Driver

Mr. W. P. L. Chandrasiri

Driver

Mr. J. P. S. P. Karunathilaka

Driver

Mr. T. P. K. Jayarathna

Driver

Mr. R. G. D. Ekanayaka

Driver

Mr. S. Ekanayake

Driver

Accounts staff

Mr. D. M. Siripala BCom.

Accountant

Mr. P. H. U. Nissanka

Assistant Accountant

HNDA, ICA (Intermediate)

Ms. P. M. Amarasinghe

Book keeper

Mr. L. P. Wirthamulla

Management Assistant (Accounts)

Mr. G. M. S. Nandadeva

Management Assistant (Accounts)

Mrs. A. K. Amarakoon

Management Assistant (Accounts)

Mr. L. K. S. Dayananda

Management Assistant (Accounts)

Mr. D. M. P. Nickson

Management Assistant (Accounts)

Mr. T. Ranjith Peiris

Management Assistant
(Clerical & Typing)

Stores

Mr. R. G. Niroshana

Storekeeper

Mr. S. A. Senarathna

Stores Labourer

Procurement Unit

Mr. H. P. R. Kumara BB. Mgt.

Procurement Officer

Maintenance Unit

Ms. D. H. S. Wijesinghe

Inspector of Works

Mr. B. Witharana

Works Supervisor

Mr. G. Gamage

Electrician

Mr. R. Palamure

Electrician

Mr. J. Wickramarachchi

Mason/Plumber

Mr. D. W. S. Chinthana

Carpenter

Mr. R. P. Kulathunga

Carpenter

Mr. D. H. Dharmadasa

Water Pump Operator

Mr. H. P. Chandrawansa

Water Pump Operator

Mr. K. H. Weeraratne

Water Pump Operator

Mr. R. M. Priyantha

General Worker

Mr. M. A. G. Ranasinghe

General Worker

Internal Audit Unit

Mr. S. P. Y. Muneendra

Internal Auditor

ICA (Intermediate) MAAT

Activities Carried out During the Year

Routine administrative, personnel management and maintenance activities of the Institute were carried out during this year too.

Non-availability of an approved Scheme of Recruitment as per the Management Services Circular No.30 was a major deficiency and this has now been rectified by obtaining the approval of the Department of Management Services for the new Scheme of Recruitment in August 2010.

Employees of the Institute were absorbed as per the new Scheme of Recruitment and the Management Services Circular No 30(i) was implemented.

The agreement signed with the Kandy Security Services (Pvt) Ltd. to provide security service to the Institute was due to be lapsed on 3rd March 2010 and this contract period was extended by one year.

As welfare measures, reimbursement of medical expenses up to the approved limit and granting of loans to the employees were continued.

Preparation of budgets and financial statements, verification of assets and provision of management information were carried out as and when required.

Review of Financial Activities

The main revenue of the Institute, cess income, for the year was Rs.142.825 million. This was a 10% increase over the previous year.

The excess over expenditure for the year was Rs.30.015 million.

The total capital expenditure for the year was Rs.27.2 million.

Staff Strengthening and Motivation

Staff Recruitments

Ms. W. M. N. S. Kumari (Technical Officer)	08.04.2010
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Staff Turnover during the year 2010

Retirements

Mr. R. W. M. S. Rajapaksha (Technical Officer)	30.09.2010
Mr. T. K. Nimalrathne (Farm Labourer)	24.04.2010
Mr. R. P. Jinasena (Farm Labourer)	07.05.2010
Mr. D. M. N. Weerarathne (Farm Labourer)	21.05.2010
Mr. M. P. Premashantha (Farm Labourer)	16.10.2010
Mr. P. Dharmadasa (Farm Labourer)	05.12.2010
Mr. R. T. M. Dharmawickrama (Technical Officer)	07.12.2010

Resignations

Ms. A. B. G. C. De Silva (Research Officer)	24.02.2010
Ms. T. P. Liyanage (Research Officer)	09.09.2010
Mr. T. P. Siriwardene (Technical Officer)	15.02.2010
Mr. Leel Wijitha Ranasinghe (Technical Officer)	08.12.2010

Vacation of post

Mr. D. P. Ubeywana (Lab/Field Attendant)	08.04.2010
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Staff Training (Foreign)/Overseas Visits

- i. Ms. D. Manel (Research Officer) attended a three-month fellowship programme from 05.10.2010 to 04.01.2011 at the Sugarcane Breeding Institute, Coimbatore, India.
- ii. Dr N. C.Kumarasinghe (Director/CEO) along with the Hon. Mihinda Samarasinghe, Minister of Plantation Industries visited Bangkok, Thailand from 14th to 18th August 2010 to find out the investment possibilities for the development of the sugar industry of Sri Lanka.
- iii. Dr N. C.Kumarasinghe (Director/CEO) along with Mrs Malini Peiris, the Secretary to the Ministry of Plantation Industries visited Cuba from 23rd to 30th November 2010 to find out the possibilities of collaboration for sugarcane research.

Staff Training (Local)

- i. Mr. D. M. Siripala (Accountant) participated in a seminar on the Introduction of the Sri Lanka Public Sector Accounting Standards published in 2009 on 12.02.2010 at the Institute of Public Finance and Development Accountancy.
- ii. Ms. A. K. Rathnayake (Telephone Operator) participated in a two-day training on internal and external customer care on 25th and 26th February 2011 at the National Institute of Labour Studies (NILS).
- iii. Mr. P. H. U. Nissanka (Assistant Accountant) followed the Certificate course in English for Employment Purpose (CEEP) 2010 at the Sri Lanka Institute of Development Administration.
- iv. Mr. N. G. A. L. P. Nanayakkara (Administrative Officer) participated in a training programme on Transport Management on 26.02.2010 at the Construction Equipment Training Centre (CETRAC).
- v. Mr. K. A. Ariyaratne (Farm Superintendent) participated in a one-day programme-2010 on Concept of Power and Art of Leadership Project cde:1D-M-17 on 11.05.2010 at NILS.

- vi. Mr. K. H. D. Abeyrathna (Research Officer) participated in a Construction Equipment Training Awareness Programme on 20.07.2010 at the CETRAC Auditorium, Battaramulla.
- vii. Mr. N. G. A. L. P. Nanayakkara (Administrative Officer) attended an office management course on 29th and 30th July 2010 at NILS.
- viii. Ms. M. K. R. Silva attended a training on Radiation Safety on 17th to 20th August 2010 at the Atomic Energy Authority.
- ix. Ms. V. K. A. S. M. Wanasinghe (Research Officer) and Ms. M. K. R. Silva (Research Officer) attended a workshop on Research conducted on Vector Transmission Studies in the Agricultural Crop Sector on 30th November 2010 at the Sri Lanka Council for Agricultural Research Policy.

PUBLICATIONS

- i. Wijesuriya A, Ariyawansa B.D.S.K., Sunil H.K. and Keerthipala A.P. (2010). Spaced Planting of Seed Setts of Sugarcane (*Saccharum* hybrid spp.) A cheap and Easy Method of Planting. Proceedings, 3rd Symposium on Plantation Crop Research.
- ii. Atapattu D. G. T., Perera A. M. M. S., Ariyawansa B.D.S.K., Manel D. and Wijesuriya A. (2010). Determination of Optimal Phyto-hormone Levels for Sugarcane (*Saccharum* hybrid spp.) Meristem Culture Protocol, Proceeding, 3rd symposium on Plantation Crop Research
- iii. De Silva, A.L.C. and De Costa, W.A.J.M. (2010). Proceedings of the International symposium 2010. 16th November 2010, Faculty of agriculture, University of Ruhuna, Mapalana, Kamburupitiya, Sri Lanka. P5.
- iv. De Silva, A.L.C. and Witharama, W.R.G. (2010). Optimum inter-settling spacing and potential of using cane tops in spaced transplanting technique of Sugarcane in Sri Lanka, *In: Proceedings of the Third Symposium on Plantation Crop Research – Stakeholder empowerment through Techno-logical Advances* (Eds. R.S.Dharmakeerthi and A.M.W.K.Senevirathna) Rubber Research Institute of Sri Lanka, Dartonfield, Agalawatte. pp 108-120.
- v. Witharama, W.R.G. and De Silva, A.L.C. (2010). Effects of stubble shaving, fertilization and gap filling on the performance of sugarcane (*Saccharum officinarum* L.) ratoon crops in Sri Lanka. *In: Proceedings of the Third Symposium on Plantation Crop Research – Stakeholder empowerment through Techno-logical Advances* (Eds. R.S.Dharmakeerthi and A.M.W.K.Senevirathna) Rubber Research Institute of Sri Lanka, Dartonfield, Agalawatte. pp 189-199.

- vi. Ariyawansha, B.D.S.K and Keerthipala, A.P. (2010). Analysis of characteristics of rainfall in relation to sugarcane cultivation in Sevanagala. International Symposium 2010, Faculty of Agriculture, University of Ruhuna.
- vii. Ariyawansha, B.D.S.K and Keerthipala, A.P. (2010). Temporal trends of climatic variables in Sevanagala and Pelwatte sugar mill areas of Sri Lanka. Third plantation crop research symposium, 2010.
- viii. Ariyawansha, B.D.S.K. (2010). Climatic change and its impact on sugarcane cultivation in Sri Lanka. A report submitted on request of the Board of Governors of SRI.
- ix. Kodituwakku, K.A.D. (2010). Global sugar industry outlook. A report submitted on request of the Board of Governors of SRI.
- x. Kodituwakku, K.A.D. (2010). Soaring global sugar prices: causes, and an opportunity for the local sugar industry development, Economic Review, Jun-Jul 2010.
- xi. Kodituwakku, K.A.D. (2010). Shifting sugarcane farmers to banana and paddy at Sevanagala, Sri Lanka, Economic Review, Aug-Sep 2010.
- xii. Kodituwakku, K.A.D and Keerthipala A.P. (2010). Shifting sugarcane farmers to banana and paddy at Sevanagala, Sri Lanka, Economic Publication Series 10.

STUDY REPORTS

Two reports, one on the feasibility of developing sugarcane cultivation and processing industries in Vavunia and Kilinochchi districts and the other on the availability of lands for sugarcane cultivation in Sri Lanka, were compiled based on field investigations and information obtained from relevant organisations

AWARDS

An award was received for the best presentation in sugar sector for Ms. A.M.M.S. Perera for the paper titled “Determination of Optimal Phyto-Hormone Levels for Sugarcane (*Saccharum* hybrid spp.) Meristem Culture Protocol” in the 3rd symposium on Plantation Crop Research in year 2010. The paper was authored by Atapattu D.G.T., Perera A.M.M.S., Ariyawansha B.D.S.K., Manel D, & Wijesuriya A.

Report of the Audit and Management Committee-2010

As in the previous year, three audit and management committee meetings were held during the year 2010. The audit and management committee fulfilled its functions as a sub committee to the Board of Governors.

Only three meetings were held because of the change of the line ministry and the resulting delay in appointing the representative of the Treasury.

It was possible to find solutions to various problems of the institute and to rectify weaknesses of the systems of control. Necessary recommendations on some issues were given to the Board of Governors to facilitate its decision making on those issues. Furthermore, it was possible to minimise the audit queries that could be raised by the Auditor General's report

Thus, the audit and management committee has helped the institute in the administration of the institute by providing solutions and recommendations to the problems encountered.

Internal Auditor
Sugarcane Research Institute
30th August 2011.

AUDITED FINANCIAL STATEMENTS

SUGARCANE RESEARCH INSTITUTE

STATEMENT OF FINANCIAL POSITION AS AT 31ST DECEMBER 2010

Assets	Notes	2010 Rs.	2010 Rs.	2009 Rs.	2009 Rs.
Non current assets				Net Value	
Property, Plant and Equipment	1	88,755,317.00		46,112,939.00	
Investment (L / T)	2	29,500,113.00	118,255,430.00	29,500,113.00	75,613,052.00
Current assets					
Consumables stock	3	5,352,815.00		5,005,733.00	
Work in progress		717,521.00		8,920,121.00	
Trade and other receivables	4	46,915,647.00		44,629,637.00	
Investment (S / T)	5	197,434,957.00		166,360,359.00	
Prepayments & other deposits	6	842,381.00		898,084.00	
Cash and cash equivalents	7	16,901,137.00	268,164,458.00	16,140,230.00	241,954,164.00
Total assets			386,419,888.00		317,567,216.00
LIABILITIES					
Current liabilities					
Payable	8	5,212,598.00		4,159,864.00	
Accrued expenses	9	6,017,526.00	11,230,124.00	5,870,879.00	10,030,743.00
Non-current liabilities					
Deferred income	10	7,853,601.00		1,183,755.00	
Provision for gratuity	11	30,020,313.00	37,873,914.00	28,688,562.00	29,872,317.00
Total liabilities			49,104,038.00		39,903,060.00
Total Net Assets			337,315,850.00		277,664,156.00
Net Assets / Equity					
Accumulated fund	12	145,285,139.00		145,285,139.00	
Reserves	13	164,110,711.00	309,395,850.00	132,379,017.00	277,664,156.00
Revaluation reserves			27,920,000.00		
Total Net Assets/Equity			337,315,850.00		277,664,156.00


S.K.Cyril Suduwella
Chairman


Dr N.C.Kumarasingha
Director/ Chief Executive


D.M.Siripala
Accountant

SUGARCANE RESEARCH INSTITUTE
STATEMENT OF FINANCIAL PERFORMANCE FOR THE YEAR
ENDED 31ST DECEMBER 2010

	Notes	2009 Rs.	Year 2010 Rs.
Operating Revenue			
Cess on sugar imports		142,875,726.00	129,853,159.00
Other income	14	20,485,602.00	28,914,929.00
		<u>163,361,328.00</u>	<u>158,768,088.00</u>
Operating Expenses			
Personal emoluments	15	78,776,912.00	78,187,910.00
Travelling & subsistence		1,703,617.00	1,574,319.00
Foreign visit		1,731,477.00	
Supplies and consumables used	16	1,827,313.00	1,297,704.00
Maintenance	17	12,143,898.00	14,109,718.00
Contractual services	18	17,804,714.00	17,433,170.00
Research & development	19	5,623,630.00	7,811,118.00
Depreciation and amortisation expenses		12,480,254.00	10,842,328.00
Other operating expenses	20	1,193,627.00	2,324,397.00
Bad debts			11,143.00
Total operating expenses		<u>133,285,442.00</u>	<u>133,591,807.00</u>
Surplus / (Deficit) from operating activities		30,075,886.00	25,176,281.00
Finance cost		146,607.00	188,811.00
Gain on sales of property plant and equipment			
Total non operating revenue(expenses)		<u>146,607.00</u>	<u>188,811.00</u>
Net surplus / (Deficit)before extra ordinary items		<u>29,929,279.00</u>	<u>24,987,470.00</u>
Net surplus / (Deficit) for the period		<u>29,929,279.00</u>	<u>24,987,470.00</u>


S.K.Cyril Suduwella
Chairman


Dr N.C.Kumarasingha
Director/ Chief Executive


D.M.Siripala
Accountant

SUGARCANE RESEARCH INSTITUTE
CASH FLOW STATEMENT
FOR THE YEAR ENDED 31 ST DECEMBER 2010

	2010	2009
Cash flows from operating activities		
Surplus / (deficit) from ordinary activities	29,929,279.00	24,987,470.00
Non cash movements		
Depreciation	12,480,254.00	10,842,328.00
Provision for gratuity	2,410,965.00	3,104,074.00
Prior year adjustment	1,802,415.00	(62,798.00)
Differed income	6,669,846.00	(1,581,510.00)
Operating profit / (Loss) before working capital changes	53,292,759.00	37,289,564.00
Increase / Decrease in sundry debtors	(9,722,508.00)	(9,091,760.00)
Increase / Decrease in sundry stock	(347,082.00)	(1,379,843.00)
Increase / Decrease in Working progress	8,202,600.00	(8,820,121.00)
Increase / Decrease in advance & prepayments	55,703.00	539,469.00
Increase / Decrease in staff loan	7,436,498.00	(2,899,370.00)
Increase / Decrease in creditors & other payables	1,199,381.00	(4,853,241.00)
Cash generated from operating activities before income tax	60,117,351.00	10,892,198.00
Cash flows from / (used) in investing activities		
Purchase of property , plant & equipment	(27,202,633.00)	(4,283,750.00)
Net cash flow from / (used) in investing activities	(27,202,633.00)	(4,283,750.00)
Cash flows used in financing activities		
Payment of gratuity	(1,079,213.00)	(3,915,626.00)
Net cash flows used in financing activities	(1,079,213.00)	(3,915,626.00)
Net increase / Decrease in cash and cash equivalents	31,835,505.00	2,692,822.00
Cash and cash equivalents at the beginning of the year	212,000,702.00	209,307,880.00
Cash and cash equivalents at the end of the year	243,836,207.00	212,000,702.00
Analysis of the balance cash & cash equivalents shown in the balance sheet		
Bank balance	16,901,137.00	16,140,230.00
Treasury bill deposit	194,934,957.00	133,340,002.00
Fixed deposits	32,000,113.00	62,520,470.00
	243,836,207.00	212,000,702.00

SUGARCANE RESEARCH INSTITUTE
NOTES TO THE STATEMENT OF FINANCIAL POSITION
AS AT 31 ST DECEMBER 2010

	Rs.
1 Property, Plant and Equipment	
Please see schedule 01	
2 Investment (L/T)	
Fixed deposit (Gratuity Fund) - N.S.B.	29,500,113.00
Gratuity Fund	
Gratuity fund investment in the National Savings Bank as at 31.12.2009 amounts to Rs. 29,500,114/- while the gratuity provision for the year as at 31.12.2010 amounts To Rs.30,020,313/-.Balance amount of Rs.520,199/- in gratuity fund will be deposited As fixed deposits in the same bank on 28.02.2011	
3 Consumable stock	
Stationeries	115,052.00
Repairs and maintenance of vehicles	1,359,770.00
Repairs and maintenance of buildings	1,076,562.00
Repairs & maintenance of office equipments	387,033.00
Repairs & maintenance of machinery	223,099.00
Fuel	102,794.00
Chemical	692,562.00
Staff welfare	221,083.00
Fertilizer	1,174,860.00
Total consumables stock	<u>5,352,815.00</u>
4 Trade & other receivables	
Advance : Local purchase	77,406.00
Sundry	250,740.00
Travelling	700.00
Fuel	30,302.00

Interest receivable :	F.D. - N.S.B.	2,591,034.00
	Bank savings	72,305.00
	Treasury bill - P.B.	8,120,521.00
	Treasury bill - B.C.	2,859,144.00
Staff loans :	Housing loan (Schedule 02)	6,273,626.00
	Distress loan (Schedule 3)	18,856,747.00
	Festival advance (Schedule 4)	200,300.00
	Push cycle loan (Schedule 5)	51,242.00
	Motor cycle loan (Schedule 6)	2,340,368.00
	Book loan (Schedule 7)	6,000.00
	Computer loan (Schedule 8)	364,667.00
Special loan :	Kantale Sugar Ind. (PVT) Ltd.	3,000,000.00
Sundry debtors :	Janatha Fertilizer	250.00
	Kantale Sugar Ind. (PVT) Ltd.	14,345.00
	Ministry of Supplementary crop plant	1,801,100.00
	T.K. Tenison	4,850.00
Total Trade & other receivable		<u><u>46,915,647.00</u></u>
5	Investment (S/T) : Treasury bill - P.B	113,313,579.00
	Treasury bill - B.C	81,621,378.00
	Fixed deposit (Scholarship)- N.S.B.	500,000.00
	Fixed deposit P.B	2,000,000.00
	Total Investment (S/T)	197,434,957.00
6	Prepayment & other deposits	
Prepayments -	Licence & insurance	23,295.00
	Medical	8,501.00
	Money in transit	12,680.00
	Rent	177,500.00
	Repair & maintenance of office equipment	22,030.00
Other deposits	C.B. Ellepola	2,500.00
	Electricity Board	150,100.00
	Embilipitiya M.P.C.S. Ltd.	155,000.00

	Gas cylinder	118,375.00
	M.N.W. & R.L. Fernando	70,000.00
	M.T.N Net Work	2,500.00
	Rubber Research Institute	86,400.00
	Softlogic Information	1,500.00
	Sri Lanka customs	10,000.00
	Thusitha news papers	2,000.00
	Total Prepayment & Other deposits	842,381.00
7	Cash and cash equivalents	
	People's Bank - Uda Walawe A/C No. 101	2,801,087.00
	People's Bank - Ratmalana A/C No. 080 - 1 -001-5-1334359	2,817,351.00
	Bank of Ceylon - Ratmalana A/C No. 272977 – 5	21,127.00
	Peoples Bank - Uda Walawe A/C No. 1550021284	399,834.00
	Bank Savings - People's Bank - Ratmalana- A/C No. 080-2-001-3-1334359	2,674,174.00
	People's Bank - Uda Walawe - A/C No. 295-2-001-7-0020749	7,687,564.00
	Cash transit to Uda Walawe	500,000.00
	Total Cash and cash equivalents	16,901,137.00
8	Payable	
	A. S. Jayalath	600.00
	Auditor General's Department	590,000.00
	Refundable tender deposit (Schedule 09)	359,750.00
	Retention - (Schedule 10)	118,170.00
	Sri Lanka Sugar Corporation	2,700,020.00
	Prasad	892.00
	W. G. Nimal	833.00
	D. M. N.Weerasinghe	250.00
	Funds from Pakistan	123,043.00
	K.Mahindapala	1,188.00
	Nusith Kumaratunga & Company	18,000.00
	Bimro Tiles	106,177.00
	Heavy Machinery Tyre Point	145,376.00

Hunter & Company	48,830.00
John Keels Office Automation	27,800.00
Nanda Tractor Motors (PVT) Ltd.	14,260.00
Organic Trading (PVT) Ltd.	57,758.00
Prabhath Intra Trading	48,352.00
S.V.M.(PVT) Ltd.	50,000.00
Sarathchandra Home Centre	96,910.00
Sarath Motor Engineering	20,250.00
Sumanagiri Trade Centre	25,096.00
U & H wheel Services (PVT) Ltd.	491,019.00
U.G. Stores	111,224.00
Venura Motors	1,300.00
Wickrama Hardware	10,500.00
Department of Motor Traffic	45,000.00
Total payables	<u>5,212,598.00</u>

9 **Accrued expenses**

Building rent	102,328.00	
Consultancy	8,500.00	
Electricity	240,624.00	
Fuel	127,091.00	
News papers	2,250.00	
Over time	233,381.00	
Payee tax	18,846.00	
Postage	10,200.00	
Repair & maintenance of vehicles	64,802.00	
Security	598,658.00	
Tax for motor traffic	23,325.00	
Telephone	126,421.00	
Travelling & subsistence	27,871.00	
Water	2,943.00	
Wages	<u>729,629.00</u>	2,316,869.00

	Employees provident fund	1,053,790.00
	Employees trust fund	126,455.00
	Provision for staff medical (Schedule 11)	2,360,606.00
	Salaries & wages deductions	1,895.00
	Withholding tax	147,108.00
	Vat	10,803.00
	Total Accrued Expenses	<u>6,017,526.00</u>
10	Deferred Income	
	Treasury bill Interest P.B.	4,793,576.00
	Treasury bill Interest B.C.	1,679,003.00
	Fixed deposit	1,381,022.00
	Total deferred Income	<u>7,853,601.00</u>
11	Provision for Gratuity	
	Please see schedule 12	30,020,313.00
12	Accumulated Fund	
	Government grant for capital	44,360,000.00
	UNDP/FAD aid	474,116.00
	World Bank aid	16,598,429.00
	Japanese aid	82,064,952.00
	Australian aid	1,287,642.00
	Grant for Sugar Importers Association	500,000.00
	Total accumulated fund	<u>145,285,139.00</u>

SUGARCANE RESEARCH INSTITUTE
NOTES TO THE STATEMENT OF FINANCIAL PERFORMANCE
FOR THE YEAR ENDED 31ST DECEMBER, 2010

	Rs.
14 Other Income	
Interest Income on staff loans & other sundry income	2,720,942.00
Interest Income on treasury bills	13,892,500.00
Interest Income on fixed deposits	3,613,231.00
Interest on savings A/C's	258,929.00
Total other Income	<u>20,485,602.00</u>
15 Personal Emoluments	
Salaries & allowances	46,982,603.00
Employees provident fund contribution	8,323,437.00
Employees trust fund contribution	1,664,688.00
Overtime	3,848,601.00
Wages	9,338,153.00
Staff medical	8,619,430.00
Total personal emoluments	<u>78,776,912.00</u>
16 Supplies and consumable used	
Printing & stationery	1,661,777.00
News papers & periodicals	165,536.00
Total Supplies and consumable used	<u>1,827,313.00</u>
17 Maintenance	
Licence Insurance & fitness certificate	703,730.00
Repairs & maintenance of vehicles	3,127,928.00
Repairs & maintenance of Buildings	2,953,666.00
Repairs & maintenance of office equipment	547,242.00
Repairs & maintenance of machinery & lab equipment	1,481,830.00
fuel & lubricant	3,329,502.00
Total maintenance	<u>12,143,898.00</u>
18 Contractual services	
Newspapers notification	143,354.00
Postage	119,304.00
Rent rates & taxes	1,853,953.00
Telephone, cables, faxes & Internet	1,127,997.00

	Legal charges	39,900.00	
	Audit fees	250,000.00	
	Electricity	3,686,150.00	
	Water	48,043.00	
	Security charges	7,996,128.00	
	Gratuity	2,410,965.00	
	Transport	122,775.00	
	Workmen's compensation	6,145.00	
	Total contractual services	17,804,714.00	
19	Research & Development		
	Research materials	2,360,126.00	
	Media, Publicity, & Journals	258,680.00	
	Staff training	100,802.00	
	Consultancy fees	100,500.00	
	Symposium	292,558.00	
	Adoptive research	105,090.00	
	Chemical	1,506,674.00	
	Fertiliser	738,075.00	
	Fencing	161,125.00	
	Total research & development	5,623,630.00	
20	Other operating expenses		
	Miscellaneous	73,667.00	
	Entertainment	28,584.00	
	Staff welfare	427,138.00	
	Membership fee	12,348.00	
	Scholarship	87,750.00	
	Anniversary	159,980.00	
	Money in transits	9,436.00	
	Clearing charges	16,529.00	
	Board of Director's fees:		
	Chairman's remuneration	253,790.00	
	Working director's allowances	80,000.00	
	Director's fees & other	44,405.00	378,195.00
			1,193,627.00

Note A

Schedule : 01

Property, Plant and Equipment

	Description	Dep. Rate	Cost As At 01.01.2010	Revaluation	Addition	Cost As At 31.12.2010	Pro. For Dep. As At 01.01.10	Revaluation	Depreciation for 2010	Pro.For Dep. As At 31.12.10	Net Value 31.12.2010
1	Buildings	5%	53,293,700.00		8,820,121.00	62,113,821.00	35,080,302.00		2,286,829.00	37,367,131.00	24,746,690.00
2	Office equipment	15%	18,292,087.00		1,606,512.00	19,898,599.00	13,766,611.00		1,087,104.00	14,853,715.00	5,044,884.00
3	Work shop equipment	15%	17,822,107.00		232,848.00	18,054,955.00	16,376,915.00		368,720.00	16,745,635.00	1,309,320.00
4	Field equipment	15%	3,856,056.00		119,040.00	3,975,096.00	2,966,503.00		191,184.00	3,157,687.00	817,409.00
5	Library books	15%	2,800,705.00			2,800,705.00	2,377,191.00		115,923.00	2,493,114.00	307,591.00
6	Laboratory equipment	15%	65,888,504.00		1,741,569.00	67,630,073.00	56,960,072.00		2,281,734.00	59,241,806.00	8,388,267.00
7	Land development	15%	8,615,220.00		678,661.00	9,293,881.00	8,312,610.00		133,327.00	8,445,937.00	847,944.00
8	Furniture & fittings	15%	5,215,069.00		686,910.00	5,901,979.00	4,347,142.00		237,622.00	4,584,764.00	1,317,215.00
9	Extension & training equipment	15%	4,382,300.00			4,382,300.00	4,321,375.00		15,810.00	4,337,185.00	45,115.00
10	Agriculture equipment	15%	13,015,949.00	1,416,605.00	75,290.00	14,507,844.00	11,430,493.00	(6,138,395.00)	276,804.00	5,568,902.00	8,938,942.00
11	Bicycles	15%	134,190.00			134,190.00	131,715.00		1,485.00	133,200.00	990.00
12	Motor vehicles	25%	38,775,182.00	(2,041,582.00)	13,221,775.00	49,955,375.00	30,048,382.00	(22,406,582.00)	5,421,676.00	13,063,476.00	36,891,899.00
13	Crockery & cutleries	50%	755,522.00		14,907.00	770,429.00	705,638.00		41,307.00	746,945.00	23,484.00
14	Telecommunication facilities	25%	1,606,011.00		5,000.00	1,611,011.00	1,514,715.00		20,729.00	1,535,444.00	75,567.00
			234,452,602.00	(624,977.00)	27,202,633.00	261,030,258.00	188,339,664.00	(28,544,977.00)	12,480,254.00	172,274,941.00	88,755,317.00



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கணக்காய்வாளர் தலைமை அறிப்பித் திணைக்களம்
AUDITOR GENERAL'S DEPARTMENT



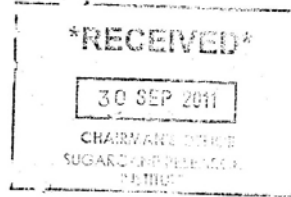
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Date

2011 සැප්තැම්බර් 24 දින



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02. ඉහත සඳහන් ලිපිය සමඟ පවුල ලද මාගේ වාර්තාවේ ඉංග්‍රීසි අනුවාදය මේ සමඟ පවා ඇත.

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විගණකාධිපති.

- පිටපත් : 1. ලේකම් - සුළු අපනයන හෝන ප්‍රවර්ධන අමාත්‍යාංශය
 2. ලේකම් - මුදල් හා ක්‍රම සම්පාදන අමාත්‍යාංශය.

නිදහස් විකුර්තය,
කොළඹ 07, ශ්‍රී ලංකාව

சதந்திர சதுக்கம்,
கொழும்பு 07, இலங்கை

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புகள் இல
Fax No. } 2697451

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e-mail } oaggov@sltnet.lk



විගණකාධිපති දෙපාර්තමේන්තුව
கணக்காய்வாளர் தலைமை அபிபதி திணைக்களம்
AUDITOR GENERAL'S DEPARTMENT



මගේ අංක } PY/G/SRI/FA/2010
 எனது இல }
 My No. }

ඔබේ අංකය }
 உமது இல }
 Your No. }

දිනය } 25 August 2011
 திகதி }
 Date }

The Chairman

Sugar Cane Research Institute

Report of the Auditor General on the Financial Statements of the Sugar Cane Research Institute for the year ended 31 December 2010 in terms of Section 14 (2) (c) of the Finance Act., No. 38 of 1971.

The audit of financial statements of the Sugar Cane Research Institute for the year ended 31 December 2010 was carried out under my direction in pursuance of provisions in Article 154 (1) of the Constitution of the Democratic Socialist Republic of Sri Lanka read in conjunction with Section 13 (1) of the Finance Act, No. 38 of 1971 and Section 19(3) of the Sugar Cane Research Institute Act, No. 75 of 1981. My comments and observations which I consider should be published with the Annual Report of the Institute in terms of Section 14 (2) (c) of the Finance Act, appear in this report. The detailed report in terms of Section 13 (7) (a) of the Finance Act was issued to the Chairman on 22 June 2011.

1.2 Responsibility of the Management for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Sri Lanka Accounting Standard. This responsibility includes, designing, implementing and maintaining internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatements, whether due to fraud or error, selecting and applying appropriate accounting policies, and making accounting estimates that are reasonable in the circumstances

1:3 Scope of Audit and Basis of Opinion

My responsibility is to express an opinion on these financial statements based on my audit. Audit opinion, comments and findings in this report are based on review of the financial statements presented to audit and substantive tests of samples of transactions. The scope and extent of such review and tests were such as to enable as wide an audit coverage as possible within the limitations of staff, other resources and time available to me. The audit was carried out in accordance with Sri Lanka Auditing Standards to obtain reasonable assurance as to whether the financial statements are free of material misstatements. The audit includes the

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சுதந்திர சதுக்கம்,
 கொழும்பு 07, இலங்கை

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 பக்ஸ் இல } 2697451
 Fax No. }

ඉලෙක්ට්‍රොනික් තැපෑල }
 #- மெயில் } oaggov@sltnet.lk
 E-mail. }

examination on a test basis of evidence supporting the amounts and disclosures in financial statements and assessment of accounting policies used and significant estimates made by the management in the preparation of financial statements as well as evaluating their overall presentation. I have obtained sufficient information and explanations which to the best of my knowledge and belief were necessary for the purpose of my audit. I therefore believe that my audit provides a reasonable basis for my opinion. Sub-sections (3) and (4) of Section 13 of the Finance Act, No.38 of 1971 give discretionary powers to the Auditor General to determine the scope and extent of the Audit.

2. Financial Statements

2:1 Opinion

So far as appears from my examination and to the best of information and according to the explanations given to me, I am of opinion that the Sugar Cane Research Institute had maintained proper accounting records for the year ended 31 December 2010 and except for the effects on the financial statements of the matters referred in the paragraph 2:2 of this report the financial statements have been prepared in accordance with Sri Lanka Accounting Standards and give a true and fair view of the state of affairs of the Sugar Cane Research Institute as at 31 December 2010 and the financial results of its operation and cash flows for the year then ended.

2:2 Comments on Financial Statements

2:2:1 Accounting Deficiencies

The following accounting deficiencies were observed

The interest on Treasury Bills and fixed deposits relating to the year 2011 amounting to Rs. 6,472,579 and Rs. 1,381,022 respectively totalling Rs. 7,853,601 had been shown in the financial statements for the year 2010 under the deferred liabilities and the interest income recoverable.

2:3 Accounts Receivable and Payable

2:3:1 Accounts Receivable

Debtors amounting to Rs. 1,815,445 had been in existence over a period exceeding one year while the debtors balance of Rs. 5,100 had been brought forward over a period exceeding 05 years.

2:3:2 Accounts Payable

Even though the sum of Rs. 2,700,020 payable to the Sri Lanka Sugar Corporation is older than 05 years action had not been taken to settle that debt.

2:4 Lack of Documentary Evidence for Audit

The accuracy of the debtors and creditors balances amounting to Rs. 4,820,545 and Rs. 4,278,440 respectively could not be established in audit due to the non-receipt of confirmation of balances.

2:5 Non - compliance with Laws, Rules and Regulations

A sum of Rs. 32,000,113 out of the funds of the Institute had been invested in fixed deposits by the end of the year under review without obtaining the approval of the Treasury in terms of Section 11 of the Finance Act, No. 38 of 1971 and the Public Enterprises Circular No. 33 of 09 December 2005.

3. Financial and Operating Review

3:1 Financial Review

According to the accounts presented, the operations of the Institute for the year ended 31 December 2010 had resulted in a surplus of Rs. 29,929,279 as compared with the surplus of Rs. 24,987,470 for the preceding year thus indicating an improvement of Rs. 4,941,809. The increase in the cess income by Rs. 13,022,567 in the year 2010 as compared with year 2009 had been the main reason for the improvement of the financial result in the year under review.

3:2 Transactions of Contentious Nature

The following observations are made.

- (a) Even though the Institute had carried out development works on the land 05 acres in extent at Siyambalanduwa, action had not been taken even up to the end of the year under review to secure in legal ownership of the land in the name of the Institute.
- (b) The approval of the Treasury had been received for the purchase of a motor vehicle and a bus by utilizing Rs. 3 million and Rs. 3.5 million respectively out of the provisions for the year 2010. Disregarding such approval, the above motor vehicles had been purchase for Rs. 5 million and Rs. 7.9 million respectively thus spending Rs. 6.4 million exceeding the limit of expenditure.

3:3 Idle and Underutilized Assets

The Meerut oven constructed at a cost of Rs. 2 million had been idling without being used. Instead, the traditional oven had been used for the manufacture of sugar cane jaggery.

3:4 Production and Import of Sugar

One of the major objectives of the establishment of the Sugar Cane Research Institute is the enhancement of the productivity of Sugar Cane production through the conduct of research on the farming and cultivation of sugar cane and the manufacture of the certain product from it. Whether such objective had been achieved during the year under review had been a questionable issue. An analysis of the data on the local production of sugar and the import of sugar during the past 11 years is given below.

Year	Local Production of Sugar	Quantity of Sugar Imported	Total Quantity of Sugar	Local Production of Sugar as the Percentage of the Total Quantity of Sugar %
	Metric Tons	Metric Tons	Metric Tons	
2000	48,000	562,000	610,000	7.87
2001	64,000	420,000	484,000	13.22
2002	39,000	554,000	593,000	6.58
2003	54,000	509,000	563,000	9.59
2004	60,000	438,000	498,000	12.05
2005	54,000	418,000	472,000	11.44
2006	56,000	525,000	581,000	9.64
2007	30,000	481,000	511,000	6.24
2008	39,000	575,000	614,000	6.35
2009	32,000	467,000	499,000	6.41
2010	31,500	559,000	590,500	5.33

According to the above the data the local production of sugar contributes only about 7 per cent of the overall sugar requirements of the country despite the existence of the sugar industry of Sri Lanka over a period exceeding 04 decades.

3:5 Implementation of Projects

- (a) Even though a sum of Rs. 25,000,000 had been allocated for the construction of an auditorium in the year under review, that project had been totally abandoned.
- (b) The financial performance of the following projects implemented by the Institute in the year under review had been at a very low level. Details appear below.

Project	Budgetary Allocation	Actual Income/ Expenditure as at 31 December 2010	Financial Performance
	Rs.	Rs.	Rs.
Sale of Sugar Cane Seedlings and Cane	1,500,000	487,585	33
Infrastructure facilities and Development Projects			
Research Materials } Fertilizer } Other }	6,585,000	3,234,853	49
Training of Staff	500,000	70,564	14

4 System and Controls

Deficiencies observed during the course of audit were brought to the notice of the Chairman of the Institute from time to time. Special attention is needed in respect of the following areas of control.

- (a) Accounting
- (b) Staff
- (c) Implementation of Projects
- (d) Utilization of Assets



H. A. S. Samaraweera
Auditor General

Replies to Auditor General's Report on the Financial Statements of the Sugarcane Research Institute for the year ended 31st December 2010 in terms of Section 14(2) (c) of the Finance Act No. 38 of 1971

2.2 Comments on Financial Statements

2.2.1 Accounting Deficiencies

Action will be taken from the year 2011 to calculate interest income on the money invested in treasury bills and deposited in fixed accounts.

2.3 Accounts Receivable and Payable

2.3.1 Accounts Receivable

Action will be taken, with the approval of the Board of Governors, to write off debts of Rs 1,815,445 more than one year and Rs 5,100 more than 5 years old.

2.3.2 Accounts Payable

Since the Sri Lanka Sugar Corporation has been closed down, it has not been able to pay Rs 2,700,020 to it. Approval has been granted by the Board of Governors at the meeting BP 07/2110 held on 20.10.2010 to write off this amount, and the approval has been sought from the treasury through the line ministry for the same. The approval has not yet been received.

2.4 Lack of Documentary Evidence for Audit

Information on the debtors and creditors is available with the institute. Though end-year balance confirmation letters have been sent, confirmation of balances has been received from 17 institutions only.

2.5 Non-compliance with Laws, Rules, Regulations and Management Decisions

The approval of the Treasury has not been obtained for the investments in the year 2010. The institute has been empowered by the Sugarcane Research Institute Act No. 75 of 1981 to maintain a fund. Accordingly, the approval has been obtained for the same at the Board meeting 07/2010.

3.0 Financial and Operating Review

3.2 Transactions of Contentious Nature

- (a) The 5-ac land at Siyambalanduwa has been given to the Sugarcane Research Institute for its use by the Grama Niladhari of Madugama. It has not yet been alienated to the institute. A request has been made to the Divisional Secretary (Siyambalanduwa) in this regard.
- (b) The institute purchased a crew cab spending Rs 5.0 million and a bus spending Rs 7.9 million of the allocations for the years 2010. But, the Director General of National Budgets has approved only Rs 3.0 million for the crew cab and Rs 3.5 million for the bus. The line Ministry was informed about the insufficiency of the approved ceiling with necessary documents on 22.12.2009. The ministry had forwarded this request to the treasury for its approval.

The covering approval was requested from the treasury in response to the enquiry made by it in this regard, but treasury has instructed to follow the correct procedure in future.

3.3 Idle and Underutilised Assets

The furnace that was constructed for research on jaggery production has some technical defects. Action has been taken to rectify those defects.

3.4 Sugar Production and Imports

One of the objectives of the institute, according to the Sugarcane Research Institute Act, is increasing productivity of the sugarcane industry. Thus, the role of the institute is contributing to increase sugar production indirectly. It has been mentioned that, even though the sugar industry has been existed for nearly four decades, local production has been only 7% of the requirement. Only two sugar mills are functioning, and since they are in the hands of the private sector, the Sugarcane Research Institute alone is not in a position to increase sugar production. The Sugarcane Research Institute has been involved in providing technical knowledge/ advises to farmers and sugar companies for increasing productivity.

3.5 Implementation of Projects

- (a) Though Rs 25 million was allocated for an auditorium, since the then line ministry advised to construct a laboratory complex, the allocated funds could not be utilised. It was planned for the years 2011/2012.
- (b) The financial performance of the following projects implemented by the institute was low and the details are given below:

Sale of seedcane and commercial cane:

Though the expected income was Rs 1.5 million, the actual income was Rs 487,585. Thus the financial performance was 32.5%. This is an over estimation. Income has reduced due to provision of seedcane to farmers free-of-charge by the development offices at Passara, Buttala, Siyambalanduwa and Hingurana for the establishment of nurseries. In the year 2010, there was no income from sale of commercial cane due to delay in harvesting due to bad weather conditions. An income of Rs 477,271 has been received by selling commercial cane in the year 2011.

Infrastructure and development projects:

Research material, fertiliser and other: Forty nine percent of the allocation has been spent. Since some fertiliser purchased in previous years were available, only the amount required for the year 2012 has been purchased.

Staff training: Rs 500,000 has been allocated for staff training. Only 14% has been spent. An improvement in staff training is expected in the next year.

4.0 Systems and Controls

Attention has been paid to the issues highlighted under (a), (b), (c) and (d).

Financial Highlights from 2005 to 2009

Income

Item	Rs Million				
	2005	2006	2007	2008	2009
Cess on sugar (imports/ production)	60.88	135.23	138.03	134.80	129.85
Interest income and sundry income	11.85	13.44	13.28	35.52	28.14
Sale of sugarcane	-	0.32	0.42	2.01	0.78
Total	72.73	148.99	151.73	172.33	158.77

Expenditure

Item	Rs. Million				
	2005	2006	2007	2008	2009
Recurrent:					
Personnel emoluments	4.14	58.47	71.84	73.23	78.19
Travelling and subsistence	0.55	1.09	1.02	1.49	1.57
Research and development	3.95	9.29	3.67	4.37	7.81
Supplies and consumables	2.03	0.62	3.63	3.61	1.30
Contractual services	59.78	15.45	15.17	18.90	17.43
Maintenance	3.71	5.85	7.45	11.40	14.11
Other operating expenses	0.30	1.01	1.44	1.78	2.32
Finance cost	-	0.08	0.12	0.17	0.19
Total	74.46	91.95	104.35	114.95	122.93
Capital:					
Buildings	0.03	-	0.48	2.12	-
Office/Lab/Field equipment	2.00	3.06	3.46	10.38	2.68
Vehicles	-	-	15.28	-	1.09
Land development	-	-	0.15	0.03	0.13
Library books	0.37	-	0.38	-	-
Furniture	0.03	0.21	0.07	0.35	0.36
Other facilities	0.02	0.08	0.06	0.14	0.03
Total	2.45	3.36	19.90	13.03	4.28
Total	76.91	95.31	124.25	127.98	127.21

