Performance Review of the Seed Certification Service of the Department of Agriculture

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Review Team

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Acronyms

CCB	Coconut Cultivation Board
DOA	Department of Agriculture
DGA	Director General of Agriculture
DUS	Distinctness, Uniformity and Stability
ECT	Extension and Training Centre
FRDI	Fruit Research and Development Institute
FCRDI	Field Crops Research and Development Institute
GAP	Good Agricultural Practices
ICT	Information and Communication Center
HORDI	Horticultural Crops Research and Development Institute
NAICC	National Agricultural Information and Communication Centre
NBG	National Botanical Gardens
NPQS	National Plant Quarantine Service
OFC	Other Field Crops
PPS	Plant Protection Service
ROP	Registrar of Pesticides
RRDI	Rice Research and Development Institute
SCPPC	Seed Certification and Plant Protection Centre
SCS	Seed Certificating Service
SPM	Seed and Planting Materials
SPMDC	Seed and Planting Material Development Centre
TRI	Tea Research Institute

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Executive Summary

It is estimated that quality seeds and planting materials play a vital role in improving the productivity of the crop sector by at least by 20 – 25%. Hence, availability and accessibility of quality assured seeds and planting materials is considered as the first choice of the farming communities looking forward to maximizing output from their investment. In order to fulfil these farmers' aspirations, the DOA instrumented policy changes and infrastructure development since late 1950s to ensure the availability of quality assured SPM of major crops grown in Sri Lanka.

The SCS of the DOA, established in 1979, virtually embraces SPM related activities wherever they are bred, multiplied, imported and traded through an island wide network of 24 regional stations, supported by 5 seed testing laboratories, a seed health testing laboratory and 6 post control testing farms. The organization collaborates with the public and private sector seed producers, importers and marketing organizations. These functions are empowered by statutory responsibilities vested under the Seed Act No. 22 of 2003.

In general, the responsibilities of the SCS, cover under 7 technical units; namely (Field inspectorate, Seed Testing, Seed research and seed health testing, variety section, fruit plant certification, seed act, GAP certification) around 16 disciplinary areas including; implementation of Seed Act No. 22 of 2003; certification of quality of basic seed and commercial grade seeds (of rice, vegetables, other field crops, fruits and potatoes) and planting materials; certification of fruit mother plants; fruit plant certification and nursery registration; laboratory testing of local and imported seeds for germination, viability, purity and moisture; evaluation of the quality of imported and local seeds through post control grow out trials; testing of Distinctness, Uniformity and Stability (DUS) of varieties prior to recommendation for release; testing of local hybrid seed lots to confirm the level of hybridity through grow out trials; laboratory testing of local and imported seeds for seed health; conducting training and awareness programmes for seed growers, private sector company personnel, nursery men and officers of the DOA and Provincial DOAs on quality SPM production; conducting seed technology research to overcome on field issues of quality seeds; quality assurance of stored seeds, denomination of imported seeds prior to marketing; data base management and monitoring; publishing directories of nurseries and seed producers; and conducting GAP certification programme for agriculture products.

The review team undertook extensive discussions with the DOA officers engaged in Seed Certification, SPM development and private sector involved in SPM production, importation and marketing, and farmer organizations engaged in seed production and marketing of local seeds. The outcome of these discussions were fruitful in developing proposals to harmonize different sectors engaged in breeding, multiplication, importation, certification and marketing of SPM in Sri Lanka. The review team observed that there are considerable perception gaps between DOA and the private sector (at different levels) involved in this sphere of activities. Absence of regular dialogue between the two parties is the main cause for this situation and should be rectified.

SCS has qualified scientific staff to undertake seed research in the DOA although not mandated to do so. Therefore, it is recommended that this mandate be given officially to the SCS. The recent strides made by the SCS to install seed health testing facilities affiliated to the Central Seed Testing Laboratory at Gannoruwa are commendable. Field problems with regard to seeds and planting materials are enormous in Sri Lanka especially in the climate change scenario. The seed industry needs a strong R&D apparatus to run their businesses efficiently. Seed research is also vital for implementation of the Seed Act where regulations have to be based on scientifically validated information under prevailing conditions in Sri Lanka. It is also strongly recommended that high priority be given to allocate additional scientific staff to strengthen seed research by the SCS.

The private sector demands periodic official forum at least per season to interact with the DOA. Such opportunities for discussion should be facilitated under the DGA for industry development as soon as possible. Private sector representation in the National Seed Council under the Seed Act is virtually nil. Therefore, the sector is without a forum to discuss their issues at the top level.

The review team observed that the following changes are imperative for the development of the SCS to cater to the future needs of the country.

1. SCS must be up-scaled in the DOA hierarchy to play a leadership role in the industry from the current sober state to become a dynamic and catalytic organization.

2. Its existing focus mostly on the quality control in the formal sector and not the informal sector is a serious handicap to development of both sectors.

3. SCS has to play an important proactive role in quality seed production and interaction with the informal sector must be emphasized.

4. It is necessary to empower the SCS to undertake seed technology research as a priority.

5. Steps needed to be taken to stop two kinds of labelling of planting materials as fully certified and quality assured that confuses the public and reflects adversely on DOA.

6. The Good Agricultural Practices (GAP) certification service should be upgraded as a separate entity under SCS with island wide coverage supported by the provincial and interprovincial extension staff and SCS staff.

7. Enhance the infrastructure facilities especially mobility of the field staff that hinders the development of the seed sector.

8. Establish a dedicated Publicity Unit affiliated with the NAICC to create awareness among the public on the importance of certified SPM to achieve highest level of production.

9. SCS has authorized external agencies (i.e. CCB) to undertake certification on its behalf. However, instances of low quality planting materials entering the market was observed. Therefore, an annual audit of these agencies is recommended and better supervision is necessary. The SCS should be prepared to perform its own labeling of planting materials in addition to labeling by external agencies after final verification.

10. The informal sector (mostly village-based companies) producing SPM do not strictly follow the SCS prescribed procedures and the formal sector (mostly Colombo-based companies) who have a better understanding of certification procedures having different capacities and ideologies cannot be treated equally under the Seed Act. Therefore, a separate mechanism is required for the development of these two extremities considering their considering their dominant role supplying SPM to the agriculture sector.

11. In addition, due recognition should be given to the semi-formal sector (those who follows the scientific procedure up to a certain extent in between these two groups), as the most formidable sector accounting for the major share of the industry. This is aligned with the National Policy Framework on Production of Seeds and Planting Materials which emphasizes energized local production of quality seeds (see 14 below). The SCS should capitalize on this new development forthwith and work with the large number of village-based seed producers.

12. The Seed Act (No. 22 of 2003) should be amended accordingly and empowered with appropriate regulations without which implementation of a vital legislation for the protection of farmers would be nullified.

13. In order to be efficient and accountable, it is recommended to install and operationalize a SCS Steering Committee (SCS - SC) under the Seed Act. The SCS –SC would assist the National Seed Council through its proposed TOR / mandate.

14. The policy directives and activities underlined in this "Performance Evaluation Report of SCS" encompass those sectoral policies and policy components on agriculture pledged under the "National Policy Framework Vistas of Prosperity and Splendour" published by the Ministry of Finance, Sri Lanka. We observed that the proposed Activities under the National Policy Framework has identified Production of Seeds and Planting Materials as a main activity with 4 sub-activities covering 1. "Introduce a domestic seeds policy" to produce quality seeds at international standard; 2. A standards certificate to be made compulsory to import seeds 3. Promote private sector to produce quality planting material on a large scale. 4. Establish a seeds bank under the Ministry of Agriculture to ensure seed safety. Hence, the comprehensive exercise we have undertaken to review the SCS in DOA during the period from May to October 2019, covers all the above 4 activities totally, that makes this review and the suggestions proposed more meaningful and valid in the context of present government policy directions on agriculture development.

Chapter 01

Introduction to the Review

The Science and Technology Development Act No. 11 of 1994 mandates the National Science and Technology Commission (NASTEC), inter alia, to review the progress of Science and Technology Institutions in relation to the objects set out in section 2 of the Act. Accordingly, this review is carried out with the objective of determining the progress of the Seed Certification Service of the Department of Agriculture and to suggest improvements.

There are several objectives of this review as outlined by NASTEC.

1. To assess the quality, cost effectiveness, relevance, and impact, of the scientific programmes conducted at the organization
2. To ensure that the needs and expectations of the government and other stakeholders are being met to the fullest extent possible
3. To obtain information on how to improve the activities of the organization
4. To induce self-reflection by the scientists at the organization on the results and outcomes of S & T activities
5. To encourage good management of the organization
6. To improve internal and external transparency
7. To recommend future resource commitments
8. To gather information for policy change
9. To inform stakeholders about the organization's competencies.

After due consideration of the above objectives and the current status and developmental focus and responsibilities undertaken by the organization with regard to the entire seed and planting material industry in Sri Lanka, the review expanded its scope to cover the following areas as well.

1. To assess the capacity of the organization to undertake the new responsibilities thrust on the organization
2. To assess the relevance and cost effectiveness of new activities undertaken by the organization
3. To assess the readiness for climate smartness in planning and management of the organization
4. To identify the significant handicaps of performance and make recommendations for policy level rectification

Chapter 02

Background of the Seed Certification Service

a) Brief History:

The government has realized that the availability of quality seeds and planting materials is vital to improve the productivity of the crop sector at least by 20 – 25% when implemented at full scale. Quality SPM is the first choice of the farming community looking forward for maximum output from their investment. In order to fulfil this farmers' right, the DOA has since late 1950s undertaken a series of progressive structural and functional changes to ensure the availability of quality assured seeds and planting materials of major crops grown in Sri Lanka.

As far back as 1958, the DOA established a Seed Testing Laboratory in the Royal Botanical Gardens, Peradeniya with a capacity of handling 1,700 seed paddy samples per year. Later in 1970s in order to fulfil the growing demand for quality seeds, a Seed Testing Laboratory was established at Gannoruwa having a capacity to handle more than 5,000 seed paddy samples per year. The Seed Testing Laboratory in Gannoruwa obtained membership of the International Seed Testing Association (ISTA) in 1974 which is recognized as a major milestone in the history of the DOA. The DOA established the SCS in 1979 using technical assistance from the Government of The Netherlands grant aid programme under the global Seed Industry Development Programme (SIDP) of the FAO. SIDP is considered the major turning point of seed industry development in the country. From 1978 onwards, the DOA took initiatives to further establish Seed Testing Laboratories at Mahailluppalama (1979), Batatha (2000), Aluththarama (2000) and Paranthan (2017) making a total number of 5 seed testing laboratories in the country.

The field inspection and certification activities commenced with rice (1980) and later expanded to pulses (1983), vegetable crops (1984), potato (1986), fruit crops (1990), coconut seedlings (1992) and true seeds of big onion and some fruit seeds (papaya, passion fruit, and water melon) (2016). The Post control testing of these crops commenced parallelly in six-fields assigned for the purpose at Gannoruwa PC 1, Gannoruwa PC II, Mahailuppallama PC III, Sita Eliya PC IV and expanded later in 2015 to Batatha PC V and Karadiyannaru PC VI. Over time, the SCS established 24 regional units around the country to facilitate the field inspectorate. DUS testing of new varieties was mandated to the SCS by the directorate of the DOA in 1984.

Incorporation of Seed Act No 22 of 2003 by the Parliament is considered as another major step taken for the development of the seed sector of the country and empowerment of the SCS to ensure that the public and private sectors engaged in seed production, importation and marketing in the country would fulfill the quality aspirations of the farmer. Although a new Seed Act was drafted in 2013 by the DOA to address fresh issues related to the seed industry development, it was not considered by the relevant authority. At present, SCS awaits

government approval of the regulations drafted under the existing Seed Act of 2003.

b) Vision and Mission

Vision of the DOA is to achieve excellence in agriculture for national prosperity. SCS Mission is to promote the availability of high yielding and quality seeds through policy directives, training, instruction, monitoring and certification to assure the genetic and physical purity of seeds and planting materials and the production process of recommended varieties.

At present, the DOA's Corporate Plan 2019- 2030 which is in the process of finalization, mentions the vision of the DOA as "Achieve excellence in food crop sector for national prosperity" and under this common vision each institute has specific missions, goals and objectives. Accordingly, the mission of the SCS is now "Assure the quality of seeds and planting material and agricultural produce through national standard and certification".

c) Goals, Objectives and Responsibilities

SCS has a broader responsibility with legal coverage under the Seed Act with regards to industries and organizations engaged in seed and planting material production, importation and marketing in the country. Therefore, based on the magnitude of the coverage, responsibility and expectations of farmers, there is a reasonable justification to upgrade SCS to an independent Centre under DGA. This major turning point would help eliminate unhealthy subjugations in Seed and Planting Material Industries.

As per the DOA Annual Performance Reports (2016, 2017 and 2018), SCS responsibilities are;

1. Implementation of Seed Act
2. Certification of the quality of basic seeds and planting material before multiplication
3. Certification of the quality of commercial seeds and planting materials of rice, vegetables, OFC, potatoes, true seeds of onion and seeds of some fruit crops
4. Fruit plant certification and fruit nursery registration
5. Selection and registration of suitable mother plants
6. Laboratory testing of germination, viability, purity and moisture of local and imported seeds
7. Post-control grow out trials for quality testing of locally produced and imported seeds
8. Conducting tests on DUS, prior to release of new crop varieties
9. Conducting seed health testing
10. Training and awareness programmes for Seed growers, Nurserymen, Seed handlers and Officers on quality seeds and planting material production, processing, storage and handling, etc. in relation to Seed Act
11. Research to overcome field problems on quality seed and planting material production
12. Quality testing of seeds in the market

13. Seed development and quality promotion activities
14. Database management and monitoring
15. Publishing Fruit Nurserymen Directory annually and Seed Producer's Directory seasonally

Following goals for the SCS have been identified in the draft Corporate Plan of the DOA.

1. Ensure use of quality assured seeds and planting materials
2. Ensure increased availability of GAP certified products and consumer confidence
3. Adoption of improved technology for seed and planting materials production,
4. Improve seed and planting material handling capacity of all stakeholders

In addition, the following objectives have also been highlighted in the draft plan.

1. To create conducive legal environment for seed and planting material regulation
2. To assure the varietal purity, uniformity and quality of seed and planting materials
3. To achieve reasonable availability of quality produce to stakeholders in the developing country context
4. To increase efficiency of certification and handling of seeds and planting materials
5. GAP certification of produce
6. Seed Technology research

d) Infrastructure facilities

SCS has the following infrastructure to implement their programmes;

1. Head Quarter Office Building at Gannoruwa, Peradeniya
2. Regional SCS offices (24); Aluththarama, Ampara, Batatha, Bibila, Batalagoda, Colombo, Hingurakgodaa, Jaffna, Karadiyan Aru, Kantale, Kundasale, Labuduwa, Matara, Matugama, Mahaillupalama, Murunkan, Nikaweratiya, Paranthan, Pelmadulla, Pelvehera, Polonnaruwa, Rikillagaskada, Sita Eliya, Vavuniya
3. Five seed testing laboratories at Gannoruwa, Mahailluppalama, Batatha, Aluththarama and Paranthan
4. Seed health testing laboratory at Gannoruwa
5. Six post control fields; Gannoruwa (2), Sita Eliya, Mahailluppama, Batatha and Karadiyan Aru
6. Available transport facilities; Jeeps-3, double cabs-07, motor cycles-18, tractors- 08

e) Governance and technical Staff

SCS operates under the umbrella of the SCPPC of the DOA (Annexure 1 and 2). The Director of the SCPPC is a member of the Directorate of the DOA. The salient feature of the SCS is its unified organizational structure where the standards and technical verifications

with regards to Seeds and Planting Materials have to be adopted and administered uniformly throughout the country by its staff. The present technical cadre strength is summarized in Table 1.

Table 1: Technical Staff strength of SCS and vacancies to be filled

	Approved cadre	Available cadre	Vacancies
Addl Director	1	1	-
Deputy Directors	5	0	5
ADAs (Development)	17	11	6
ADAs (Research)	10	1	9
Agriculture Instructors (special grade)	3	0	3
Agriculture Instructors	134	129	5
Agriculture Monitoring Officers	7	3	4
Development Officers	30	18	12
Programme Assistants	4	3	1
Research Assistants	5	5	-
Technical Assistants	44	48	-
Seed Technicians	21	14	7
Research sub Assistants	5	3	2
Seed men	26	33	

f) Fund Allocations

Funds requested, allocated amounts and expenditure from 2016 to 2018 are summarized in Table 2. It is observed that a large gap exists between requested funds and funds received under different heads (except for the fixed allocations made per year from the SPMDC vote to cover certification expenses of its own SPM. On the other hand SCS maintained its budget efficiently as observed a narrow gap between allocated funds and spent funds.

Table 2: Annual Budget 2016, 2017 and 2018 (Rs millions rounded to nearest thousand) funds requested, allocated and expenditure

Vote	Requested			Allocated			Expenditure		
	2016	2017	2018	2016	2017	2018	2016	2017	2018
Recurrent	22.010	23.007	94.420	17.320	20.530	33.73	17.320	18.670	33.726
Capital	45.500	49.500	194.160	18.150	17.250	23.39	15.270	19.414	16.322
Projects									
Seed industry	101.000			104.00			91.210	14.991	
Seed Act	21.000	20.000	22.000	14.000	15.000	17.00	13.040	7.770	17.000
AFAC	1.700	4.830	1.520	1.704	34.830	1.520	1.790	4.749	1.419
Seed Division (vote 1504)	4.000	5.000	5.000	4.000	5.00	5.000	2.970	3.980	4.384
National Production Program 1 2	4.000 1.450	4.000	**	4.000	4.000	22.500	3.620		21.857
SL-GAP			3.000	1.450		3.000	0.840		2.451
NARP			0.220			0.220			0.213
ASDA			4.320			4.432			4.265
	200.660	106.337	324.64	164.660	66.603	105.000	146.000	66.576	101.640

g) Key Activities/ Programmes

SCS is basically involved in SPM certification process. In order to achieve the sector objectives following programmes are implemented.

1. Seed certification programme: paddy, OFC, local vegetables, fruit crops and potato propagated by seeds
   -Seed farm / farmer registration
   -field inspection and monitoring
   -Seed sampling and testing
   - Seed lot sealing, labelling and lot breaking
   -Field performance evaluation in conformity with the certification procedures and standards

2. Breeder seed certification programme
   - Field registration
   - Field inspection and monitoring
   - Seed sampling and testing including health testing
   - Seed lot sealing and labelling
   Field performance evaluation in conformity with the certification procedures and

standards

3. Seed potato certification programme
   - Farm fields registration
   - Field inspection
   - Monitoring of harvesting, grading
   - Seed lot labelling and storing

   Field performance evaluation in conformity with the certification procedures and standards

4. Planting material of fruit crops certification programme
   -Mother plant selection, registration and location mapping
   -Registration of fruit plant nurseries
   -Field inspection and monitoring
   - Certification by labelling

5. Seed Act implementation programme
   - Registration of seed handlers
   - Premises inspection
   - Investigation of complaints
   - Actions against violations
   - Approval of labels for seed packs before offering for sale
   - Market Surveys as a quality regulatory action

6. Testing of imported seeds
   -Sampling and testing in collaboration with NPQS
   -Field performance evaluation in post control units
   - Denomination of imported seeds for local marketing

7. GAP certification programme
   - Farmer registration for GAP farms
   - Monitoring and advisory activities
   - Farm auditing and GAP farm certification
   - GAP products handler registration and monitoring
   - Establishment of new GAP standards in collaboration with Sri Lanka Standard Institute
8. DUS testing of new varieties prior to release
9. Seed technology research
10. Training programme for SCS staff and stakeholders

h) Stakeholders

Stakeholders includes included; Key staff of the SPMDC, Crop Research Institutes, Retired SCS officers, Seed Companies, Nursery men, Seed Traders, Seed Users/ Farmers, Farmer Leaders, Pressure Groups.

Chapter 03

Procedure Adopted for Performance Review

The review was primarily to evaluate performance of research and development programmes undertaken by the SCS during the past three years, 2016 to 2018. Following documents were studies first.

1. 'Performance Reports, DOA' (2016.2017,2018)
2. **'**Name list of certified seed suppliers', DOA
3. **'**Name list of fruit nursery growers' DOA
4. **'**Handbook for the field inspectors engaged in seed certification', DOA
5. Seed Act No. 22 of 2003

Simultaneously, the following officers, seed growers and handlers were met and discuss to collect information for the review (Refer Annex-3 and Annex 4)

A **DOA officers**

i. Several rounds of discussions with SCS staff including the Heads of Units-Data Management, GAP certification, Seed Testing Laboratories, Variety, Field Inspectorate, Perennial Crops, Seed Act Implementation, Training and Administration

ii. Key staff of the Central Seed Testing Laboratory, Gannoruwa, and Seed Health Testing Unit Gannoruwa

B **Stakeholders**

i. Key staff of the SPMDC of DOA, which is the main stakeholder of the SCS

ii. Key staff of the HORDI, Gannoruwa; FRDI, Horana; and FCRDI, Mahailluppallama

iii. Retired SCS officers
Sample of retired Heads of Regional SCS Offices who have contributed to seed industry development activities

iv. Seed companies and nurserymen
   a. Companies based at rural level and focused on local seed production (informal and semi-formal sectors)
   b. Key officers of Seed and Planting Materials Association of Sri Lanka representing seed companies (Formal sector based in Colombo) and some seed companies
   c. Private Nurserymen

v. Seed traders
   a. Seed Traders in Nuwara Eliya and Dambulla

vi. Seed users/farmers:
Farmers in different areas involved in growing several crops

vii. Farmer leaders and pressure groups

Note: Stakeholder meetings were held at SCS Headquarters and *in situ* through visitations by the team of consultants

Chapter 04
Management Assessment

SCS is not an independent government institution. Currently it operates under the SCPPC, one of the major division of the DOA headed by the Director (SCPPC) (Refer Annexure 2 and 3). SCS is responsible for implementing programmes as per the policy directions given by the Ministry of Agriculture and decisions taken by the Director (SCPPC), DGA and Directorate of DOA, accordingly.

As per the guidelines given by NASTEC for the performance review of S&T institutions, nine aspects of management were assessed (refer Annexure 4) and comments are summarized below.

a) Institutional response to the environment in planning organizational strategy

The SCS has to be dynamic to cater to the needs of a large clientele of stakeholders' country- wide. SCS activities should be planned strategically according to targets decided at the forums/meetings with stakeholders and policymakers. The existing system is capable of catering to the requests made by the clientele. However, seed and planting material quantities for which quality assurance requests are made are not sufficient to meet the country needs; and further expansion is hampered mainly due to lack of trained staff, resources and absence of a corporate plan. The observations can be summarized as follows

1. Goals and strategies were aligned with government policies. The institution is always responsive to changes in government policies and strategies.
2. The institutional response to the internal and external environment was not strong enough to and adequately to fulfil the country's need mainly due to the shortage of trained manpower, transport facilities, and fund allocations. Response to the internal environment (MOA and DOA institutions) is more significant than to the external environment (private sector and farmer organizations and individual seed and planting material users).
3. The organizational mandate (as specified by the Seed Act No. 22 of 2003) has been considered in strategic planning and the strategic plan always follows the DOA mandate concerning seeds and planting materials development and their quality assurance.
4. Stakeholder needs are taken into consideration at the national level on ad hoc basis but not sufficiently prioritized during the planning processes and implementation. Regular stakeholder consultations were lacking.
5. As a departmental institution, SCS has no Board of Governors mechanism. DOA Directorate together with the Director (SCPPC) is responsible for strategic planning.
   Additional Director (SCS) who is the in-charge of SCS with other senior staff including Deputy Directors and Assistant Directors in SCS are normally involved in strategic planning but implementation is not strong enough due to the absence

of a regular monitoring and evaluation mechanism.

6. Government allocations are always considered in strategic planning. Line budgeting from the Ministry to the SCS through the DOA is inadequate for even disbursement to its' peripheral units. A mechanism to find alternative funding opportunities (donor funding) is absent. A mechanism for other stakeholders such as HORDI, RRDI, FCRDI, FCRI, and private sector breeders should be donors to SCS for DUS testing, breeder seed certification etc. At present cost for the certification of breeder seed is around Rs 4,000 per variety per season, around Rs 15,000 per candidate variety per season for DUS Test and around Rs 10,000 per seed sample per season for Post Control Test which are gross underestimations.
7. DOA has a Progress Monitoring Unit that is responsible to monitor the physical and financial progress of the overall DOA programmes and report directly to the DGA. Internal progress review is held biannually Progress review meeting / season). At the end of the each month physical progress is evaluated by the Database management unit in collaboration with other technical divisions. However, regular progress reviews were absent and therefore, programme updating and fund allocation based on performance have been negatively affected.
8. The SCS has to be dynamic to cater to the needs of a large clientele of stakeholders' country- wide. SCS activities should be planned strategically according to targets decided at the forums/meetings with stakeholders and policymakers. The existing system is not capable of catering to country needs/demands mainly due to lack of trained staff, resources and absence of a corporate plan. The observations can be summarized as follows.

b) Planning S&T programmes and setting priorities

The SCS is predominately a service organization catering to the needs of the seed industry. However, S & T programmes operate in a few activities such as seed quality assurance, seed storage studies, plant quarantine based evaluations, etc. There is a need for establishing a mechanism for regular interaction with stakeholders to strengthen the planning research process and setting priorities. General observations are given below.

1. National development goals are considered in planning programmes and setting priorities. However, the annual activity plan has to be in line with the government resource allocations.

2. Additional Director (SCS) with the senior SCS staff plan the relevant S&T programmes and set their priorities though Director (SCPPC) and the DOA Directorate are finally making decisions according to the DOA and ministerial priorities.

3. Although the stakeholders' interests should be prioritized in programme planning, it is not considered adequately in practice.

4. Programmes are planned and approved through appropriate procedures and all procedures are according to local and international standards. All programmes are planned according to requested funds approved at the beginning of each year. However, fund receiving and releasing mechanism of the government is not efficient to facilitate timely programme implementation. Refer the attachment/fund allocations.

5. The obtaining of necessary equipment is always considered in planning programmes.

6. Private sector stakeholders are not represented at planning and regular review levels though government sector stakeholders are represented to some extent.

7. Programme planning is in line with the commercialization of the seed and planting material industries.

8. Institutional procedures in approving new S & T programmes are fair enough but effectiveness has been negatively affected due to funding constraints.

c) Planning S&T/R&D projects and activities

Seed certification functions as a unit under the SCPPC division of the DOA. The unit SCS is not mandated to undertake S&T research. However, there is significant scope and need for S&T based seed research. Research on seed science and technology is at a minimal level in Sri Lanka. It's a serious handicap for seed industry development. The SCS should be mandated for this discipline though research activities are undertaken currently undertaken in addition to routine mandated activities.

International collaboration for S&T on seed research should be established. Observations on this matter are summarized below.

1. DOA staff are regularly encouraged to timely submit project proposals according to the formats approved by the Department of National Planning and before preparing the annual budget proposal at the General Treasury.

2. Previous research results/data are used for planning projects, but the management of information systems (MIS) for research data is not available which may improve the efficiency and effectiveness of the research system.

3. The institution follows a formal process for preparation, review, and approval of projects but the process can be improved further considering the time factor and proactive role of research managers.

4. A comprehensive cooperate plan for the institution was absent. The Department of Agriculture which is the governing body of this centre has to provide a national level corporate plan for its divisions. New corporate plan of the DOA (2019-2023) is at the final stage of preparation. .

5. There is no special mechanism to promote multidisciplinary projects/ activities within the DOA system. Especially, seed research related to imports in collaboration with Plant Quarantine service needs to be strengthened.

6. Foreign collaborations had been practiced for vegetable seed improvement as a project of JICA. Regular activity to find collaborations with such foreign organizations is a necessity and needs encouragement.

7. No evidence in private sector participation in project planning though it should be encouraged by the institution.

8. Development research is not a prioritized area in the SCS system though they are involved in development activities in seed and planting material certification to promote quality seed and planting material production in the country.

9. Basic research is not sufficiently prioritized because it was not identified as a mandated activity of the institution. New research such as application of molecular based technologies for variety identification should be undertaken as basic research.

10. Considering adverse effects on the environment in planning projects should be addressed. The institution is engaged in promoting sustainable, environment-friendly local varieties. However, to strengthen the activity, the Seed Act and its regulations need amendments because heirloom varieties not true to type and would fail to satisfy the genetic purity norms in the regulations under the present Seed Act.

d) Projects/activities management and maintenance of quality

DOA does not have a project unit to involve all project-related activities but, the Progress Monitoring Unit (PMU) is responsible to monitor DOA project activities at the headquarter level under the DGA. Therefore, present PMU may be upgraded and strengthened as a Project Division. The following observations are related to institutional project management activities.

1. The procedures for resource allocation at different levels (organization, departments, programme, etc.) for seed research are not adequate and the reason might be due to the non-recognition of seed research as a mandate of the institution.

2. Basic provisions are available to ensure that instruments, equipment, and infrastructure facilities are sufficient for the implementation of projects but need to be

strengthened.

3. Finance, Engineering and Administration Divisions of DOA are the main supporting divisions for project implementations at different levels. For example Engineering Division involves in procurement and distribution of equipment and materials, while financial division involves in releasing funds and final payments of all vouchers. It means those subjects handled centrally by the head quarter and therefore, could adversely affect programme functioning in some cases at peripheral level.

4. Formal monitoring and review processes are used to direct projects towards the achievement of objectives by the head quarter of DOA. Quarterly progress reviewing mechanism has been practiced by DOA for all divisions.

5. The researchers are supported by the technical / field staff, but lack of required trained staff negatively affected S&T activities.

6. SCS has sufficiently efficient and internationally recognizable established field, laboratory methods, and appropriate protocols for quality assurance programmes.

7. Adequate scientific information (scientific journals, internet, international databases, advanced research institutes, universities, and other sources) are not secured due to limited resources. The scientists/researchers cannot implement research programmes without data bases or literature.

8. It is imperative that the quality assurance protocols in all kinds of practices should be seriously considered and strengthened. A regular reviewing mechanism for quality management at the institution level is important.

9. Inadequate IT facilities resulted in poor networking among stakeholders. All SCS regional office and Head quarter have sufficient IT facilities. Poor coverage is the major problem since some offices are located in remote areas. Seed testing reports are uploaded to web site which can be easily downloaded to regional offices.

10. Implementing e-solutions to this sector is important as per the Sri Lanka e-Agriculture strategy published in June 2016. Seed and Planting Material Information system which was developed under the JICA vegetable seed production improvement project is not fully functioning at the moment. ICT strength of the SCS should be improved.

e) Human Recourse Management

The human resource development plan, especially for S&T staff grades of the DOA including all the divisions and units, is a vital issue. Observations on the HRM of SCS are given below.

1. MIS for HRM has been developed for the DOA but yet to be implemented. SCS has PC based MySQL staff information system and two main internal data bases for seed certification and on-line data base for obtaining seed testing results. It is needed to improve existing data base including publications and projects.

2. There is a long delay in recruitment of scientific staff due to litigation and has badly affected the total programme of the DOA.

3. An HR development plan is not available and subject specific training is inadequate. Foreign training opportunities are lacking especially in seed science and technology. . Providing incentives, to maintain high staff morale and to promote a good working environment should be addressed.

4. Staff performance appraisals are practiced according to common government criteria. Present appraisal formats do not address needs of S & T staff, resulting in low efficiency and stagnation.

5. Present schemes are not strong enough to recognize the contribution of staff to S&T development. Efficient and effective rewarding and incentive mechanisms may help the DOA to enhance staff motivation, dedication to work and quality of outputs.

f) Management of organizational assets

SCS is embracing quality certification activities of DOA recommended and released seed and planting materials throughout the country. It is also mandated to implement the seed Act. However, it is severely handicapped resource- wise, operational wise and is virtually a Cinderella organization under the DOA. Its reliance on the existing administrative set up will be resulting in further degradation of the organization leading to stakeholder criticism and overall crisis in the seed and planting material sector of the country. Therefore, the organization should be strengthened to perform its mandated functions firstly through a re-organization of the DOA system and empowering the SCS as the key seed and planting material quality assurance authority to serve the farmers and the seed and planting material industry adequately as a means of ensuring food security in the country. Observations on the management of its assets are given below.

1. Field staff, laboratories and other infrastructure are partially available and the Insufficiency of resources has affected implementation of its mandate and the assigned statutory powers.

2. Infrastructure (buildings, stations, fields, roads) available is satisfactorily maintained. Vehicles and equipment (lab, field and office) are properly managed and maintained. However, the number of serviceable vehicles is inadequate.

3. Procedures to ensure that equipment is in working order is practiced. However, maintenance and repairs should be addressed timely.

4. Institution utilizes allocated funds properly but being a service-oriented institute, income generation, and cost recovery are not adequately considered.

5. The potential for earning intellectual property rights of the institute are also not yet explored.

g) Coordinating and integrating the internal functions/activities

The functional activities of the SCS such as field inspection, seed testing, seed health testing and research, variety section (DUS testing) and fruit plant certification are evolved processes and therefore, these units are comparatively stronger than the new sections such as Seed Act and GAP certification units. However, there is a strong need for staff recruitment, training, and deployment to all sections. Furthermore, an efficient networking mechanism should be introduced to strengthen internal communications as this field faces new challenges, frequently. Some important observations in this regard are given below.

1. Internal infrastructure is sufficiently upgraded. Most relevant activities such as field inspection, seed testing, seed health research, variety section (DUS testing) and fruit plant certification are well-structured and coordinated. However, the new manpower for implementing seed act and GAP certification is needed.

2. The SCS needs to be empowered to operate its programmes, especially the Seed Act implementation and therefore, the DOA should be restructured to update and upgrade the institution as a major division of the DOA to meet current needs in this sector. The institution would be represented in the directorate of DOA to directly deal with DGA for decision making.

3. All functions of seed and planting material certification are centrally coordinated by SCS headquarters. Internal communication and coordination mechanisms could be upgraded with e-solutions to enhance efficiency and effectiveness.

4. The seven units of the SCS have well defined and assigned duties. Responsibilities of research and management staff are identified and their annual performance appraisals are mandatory though the appraisal formats need to be changed as per the current needs.

5. Reporting procedures and feedback in management at different levels are available but the timeliness of feedbacks for decision making should be clarified.

h) Partnership in managing information dissemination

National level coordination for involving key partners in the seed industry headed by the DGA is beneficial though it's not regularly practiced. Mechanisms for need identification and information sharing could be formulated at this forum. Existing District Seed Coordinating Committees must be monitored, strengthened and regularized for effective stakeholder participation and decision making. The DOA has separate arms for Technology Transfer; Extension and Training Centre (ETC) and National Agriculture Information and Communication Centre (NAICC) and there should be a strong linkage with SCS on seed related information dissemination. The internal training unit of the SCS appears weak when compared with other divisions of the DOA. Implementation of a 'seasonal technology transfer programme' including training, print and electronic media, in collaboration with NAICC, ETC will be a solution within the system. Observations in this regard are given below.

1. The dissemination of information is not strong enough and not systematically planned and performed. The present system can be strengthened through a well-organized and coordinated mechanism with other relevant institutions of the DOA to address the present issues on seed production and quality control.

2. Although internal linkages within DOA are enough, sharing and dissemination of information with the informal seed sector are insufficient. Weak interactions with other key stakeholders such as the formal private sector and farmer organizations is evident.

3. To meet the effectiveness of technology transfer, institutional procedures and mechanisms have to be developed.

4. The present system is not sufficient to obtain feedback from different types of stakeholders. Reliance on ad-hoc feedback is not effective.

i) Monitoring, evaluation and reporting procedures

DOA implements its own monitoring and evaluation system by the Progress Monitoring Unit directly under DGA, but there are no parallel systems adopted in main divisions/ institutes/ centres. SCS depends on the seasonal visiting system to all regional units for M &E purposes. However, this system is not financially viable nor efficient. The following are important observations in this regard.

1. The institution monitors and evaluates (M&E) its activities periodically. However, the shortage of resources is hampering the implementation.

2. M&E of the institution is not supported by an adequate management information system (MIS), therefore, a suitable e-solution (MIS) can be adopted. To implement such programme networking of all units is essential. Insufficient ICT capacities of the units and staff is a constraint and therefore, skills and infrastructure have to be improved as per the experience of implementing 'Seed

MIS' which was introduced a few years back and is yet to be fully adopted.

3. Seasonal M & E programmes are reported in DOA progress review reports and some of the research outputs are presented at ASDA forums (Annual Symposium of DOA).

4. In the sense of external stakeholders contribution to the M & E process in the Institution is minimal. However, interaction with stakeholders within the DOA is active.

5. Utilization of the results of M&E for project/ research planning and decision-making process has no tangible evidence. This area needs more attention to improve the effectiveness of M&E.

Chapter 05

Productivity of Institution based on Outputs and S&T Staff Strength

SCS is yet to be mandated for basic seed research activities though it can be categorized currently as a R&D institution. The institution is engaged in research activities related to seed technology including germination testing, determinations of genetic and physical purity, viability, seed health and field level DUS testing of new candidate varieties originating in crop improvement research organizations especially to enhance the genetic and other quality parameters of seeds and planting materials. As a service oriented institution, SCS has been mandated to implement programmes to assure the quality of SPM towards achieving national development goals in the agricultural sector.

As per the guidelines given by NASTEC for the performance review of S&T institutions, outputs of the SCS were assessed (refer Annexure 05), based on the key activities identified as follows.

1. Laboratory testing of seeds: seed samples obtained from public sector and private sector (for local and imported) are tested using procedures prescribed by the International Seed Testing Association (ISTA) based in Geneva

2. Certification of seeds (paddy, OFC, vegetable, potato, fruits) through a systematic procedure of field registration and inspection, seed lot labelling, 'A', 'B' and 'C'-categorization and sampling, lot breaking, emergency seed sampling, sampling of imported seeds, denomination of imported varieties, breeder seed certification, DUS testing conducted for new candidate varieties, field performance evaluations of test samples of local seeds and imported seeds and market verifications

3. Certification of planting materials for DOA recommended perennial varieties

4. Mapping of perennial crop-mother plants using GPS

5. In-situ conservation of fruit plant varieties

6. GAP certification: farms and farm products

7. Implementation of Seed Act: drafting regulations, registration of nurseries, registration of seed handlers, facilitation of compensating for affected seed users, publishing of updated list of plant nurseries and seed handlers.

8. Technology development in seed production, quality assurance and their transfer: seed science research, facilitation of official release of new varieties.

9. Trainings: local and foreign staff training, seed producer training, seed handler training, other stakeholder training

10. Information dissemination and publications: advisory leaflets, posters, workshops/seminars, conferences, exhibitions, media events, field days, research papers, conference proceedings, books and monographs and technical reports

The island-wide network of the SCS needs efficient operational staff and mobility because seed producers must be served immediately from the time of seed crop establishment, several field inspections of the growing crop, sampling of the harvested seeds without delays and provision of test reports to the clients in time for disposing seeds to seed companies and traders. (Ref Table 01 p 13 for the S&T staff strength at present).

Above figures clearly shows that the system is operated without required strength of technical staff. Although DOA needs to recruit cadres, it ~~was~~ is restrained due to legal matters with a court case involving trade union actions. However, even without having full strength of staff, SCS has achieved significant progress during the reviewed years, 2016-2018.

The most important output of the SCS, which may directly make an impact on agriculture development in the country, is the quantity and quality of the certification of seed and planting materiel including seed paddy, local vegetable seeds, OFC seeds, fruits plants and imported vegetable seeds.

5.1. Certification of seed paddy

During the reviewing time period (2016-18), as usual, individual farmers as well as several government and private sector organizations such as DOA farms, cooperative societies, provincial councils/ provincial DOA, Agrarian Service Centers, Mahaweli Authority farms, farmer organizations, private companies and also NGOs were registered for certified seed paddy production programmes.

Total extent registered to produce seed paddy in 2017 was 4676 ha of which the share of private sector was 71%. Extents registered for certified seed paddy production under different sources and seed classes are given in Table 03. Deduction of 23% was observed in extent registered for seed production of rice in the year 2017 when compared to the year 2016 due to the severe drought which deeply affected farm lands with the lack of water. Similarly, flood conditions affected some part of the island and destroyed large extents of seed production.

Total extent registered to produce seed paddy in 2018 was 5559 ha of which the share of private sector was 71%. Extents registered for certified seed paddy production under different sources and seed classes are given in Table 02. 19% growth was observed in extent registered

forseed production of paddy in the year 2018 when compared to the year 2017.

Annual seed paddy requirement in Sri Lanka is about 6 million bushels at 6 bushels per ha. It is possible to calculate % of certified seed annually available in the country. If it is less than 10%, problem exists on output and relevance of the program.

Table 03: Extents under Seed Paddy production in 2016, 2017 and 2018

Source	Seed class	2016			2017			2018		
		Extent (ha) registered	Extent (ha) accepted	Accepted %	Extent (ha) registered	Extent (ha) accepted	Accepted %	Extent (ha) registered	Extent (ha) accepted	Accepted %
Research stations	Breeder's	5.88	5.12	87	6.29	5.99	95	7.29	6.42	85
Govt. farms	Foundation I	50.80	38.86	76	75.96	74.34	98	120.7	120.08	99
	Foundation II				1.60	1.60	100	1.42	1.42	100
	Registered I	604.57	565.05	93	659.23	631.90	96	835.85	562.41	67
	Registered II	30.45	30.24	99	32.60	31.20	96	46.47	45.26	97
	Certified I	106.07	89.68	83	26.30	26.30	100	93.61	53.79	57
	Certified II	11.13	9.72	85	3.00	2.80	93	11.72	8.3	71
	Commercial II				1.20	1.20	100	1.21	0.81	67
Contract growers	Foundation I	1.42	0.61	42	0.40	0.40	100			
	Registered I	154.45	74.39	48	49.79	43.24	87			
	Certified I	363.56	302.02	83	418.65	284.96	68	69.71	65.78	94
	Certified II	40.08	30.97	75	0.40	0.40	100	413.93	343.5	83
	Commercial I				83.20	67.80	81	21.86	18.22	83
Private growers	Registered I	512.51	379.05	74	118.86	111.46	94	2.23	2.23	100
	Certified I	3885.33	2729.89	79	3067.48	2480.23	81	270.54	193.3	71
	Certified II	315.99	250.91	79	118.23	100.43	85	1.21	1.21	100
	Commercial I	7.49	1.62	15	10.83	10.03	93	3385.63	2333.94	69
	Commercial II				2.20	1.60	73	256.91	189.16	74
Total		6,089.3	4,508.3	75	4,676.22	3,875.88	83	3.64	2.02	55

In 2017, a total of 12,739 mt of seed paddy was sampled of which the quality standards of 10,681 mt of seed paddy were accepted by laboratory tests (Table 04). DOA farms with contract grower programme produced 6,458 mt (51%), and Private Growers 6,272mt (49%). Although having severe drought and uncertainty weather conditions, government and contract programme increased by 18% when compared to the year 2016.

During the year 2018, a total of 14,173 mt of seed paddy was sampled of which the quality standards of 11,934 MT of seed paddy were accepted by laboratory tests. DOA farms with contract grower programme produced 7,007 MT (49%), and Private Growers 7,157 mt (51%). Although there were severe drought and uncertainty of weather conditions, seed paddy production programme increased by 11% when compared to the year 2017.

Table 04: Quantities of seed paddy tested by SCS and % accepted in 2016, 2017 and 2018

Source	**2016**		**2017**		**2018**	
	Quantity tested (mt)	**Accepted %**	**Quantity tested (mt)**	**Accepted %**	**Quantity tested mt**	**Accepted %**
Research stations	8.48	92.5	8.7	94	8.6	98
Govt. farms	3,453.7	89.8	4,591.3	89	5,428.3	91
Contract growers	1,328.4	83.4	1,866.8	84	1,579.5	80
Private growers	9,632.5	79.5	6,272.2	80	7,157.2	80
Total	14,414.5		12,739.0		14,172.6	

Accepted quality after seed testing does not mean the lots were finally labelled by SCS as certified. In reality, producers provide samples for testing and fix their own labels pending laboratory testing and issue seeds to the market before SCS has chance to label. Only DOA seeds are formally certified as absolute while the rest of private producers market seeds without full certification (quality compromised or of unknown quality).

In the case of vegetable seeds too this deficiency is prevalent. No vegetable seeds are actually certified other than those produced in the DOA. OFC seeds are generally not produced by the private sector due to problem of low economic returns.

5.2. Certification of OFC seeds

The total registered extent under OFC seed production in 2017 was 1,900 ha of which contract growers accounted for 85%. Maize, Green gram, Ground nut, Sesame, Cowpea, Finger millet, Horse gram, Mustard, Black gram and Soybean were included in the OFC seed production programme. Extents registered for seed production under different sources and classes are given in Table 05. There was boosted increment of 174% in registered extent for OFC seed production when compared to 2016 due to water scarce areas cultivating OFC's replacing paddy in 2017. Extent of Hybrid seed production was increased to satisfactory level

in 2017 when compared to 2016.

Table 05: Extents under OFC seed production and quality assurance by SCS in 2016, 2017 and 2018

		2016			2017			2018		
Source	**Seed class**	**Extent registered (ha)**	**Extent accepted (ha)**	**Accepted %**	**Extent registered (ha)**	**Extent accepted (ha**	**Accepted %**	**Extent registered (ha)**	**Extent accepted (ha)**	**Accepted %**
Research stations	Breeders	5.46	5.38	99	3.98	3.75	94	4.4	3.9	87
Govt. farms	Foundation	16.58	13.83	81	30.21	28.70	95	34.42	30.82	90
	Registered I	43.09	37.24	86	61.31	56.88	93	1.00	1.00	100
	Registered II				0.4	0.4	100	44.76	27.99	63
	Certified I	7.29	4.45	57	6.4	4.8	75	1.01	1.01	100
	Certified II	1.42	0.81	57				5.71	3.44	60
	Hybrid	2.02	1.82	90	6.6	6.2	94			
	Commercial I	2.83	2.63	92	1.01	1.01	100	1.01	1.01	100
Contract growers	Foundation				2.83	2.83		0.4	0.4	100
	Registered I	98.28	74.29	75	320.20	245.80	77	32.29	11.54	36
	Registered II	4.45	4.45	100	31.42	24.92	79	251.77	181.47	72
	Certified I	261.7	194.09	74	868.21	811.76	93	23.7	23.7	100
	Certified II	164.57	76.11	46	211.70	150.00	71	849.18	683.37	80
	Hybrid				7.40	7.40	100	216.77	154.87	71
	Commercial I	27.63	12.04	44	160.08	121.22	76	5.47	3.44	63
	Commercial II	31.28	27.94	87	11.30	8.40	74	28.13	26.41	94
Private growers	Registered I	6.07	0.81	16	2.40	2.40	100	10.23	10.23	100
	Certified I	11.53	4.66	36	133.62	128.20	96	3.03	1.42	47
	Certified II	6.58	0.4	6				14.07	6.68	47
	Commercial I	1.21	0.2	16	18.92	18.18	96	7.29	3.04	42
	Commercial II	0.81	0.81	100	16.30	15.20	93	n/a		87
	Hybrid				5.8	5.4	93	n/a		90
Total		692.8	457.3	65	1,900.09	1,643.45	86			100

The total registered extent under OFC seed production in 2018 was 1,534 ha of which contract growers accounted for 92%. Maize, Green gram, Ground nut, Sesame, Cowpea, Finger millet, Horse gram, Mustard, Black gram and Soybean were included in the OFC seed production programme. Extents registered for seed production under different sources and classes are given in Table 07. There was 19% of reduction in registered extent for OFC seed production when compared to 2017 while seed paddy production increased parallelly. Extent of Hybrid seed production decreased significantly in 2018 when compared to the year 2017.

In 2017, total OFC seed production was 1,573mt and 82.5% of the productions were certified. It was a boost increment of 164% when compared to 2016. The Quantities tested and percentages accepted from different sources are given in Table 06. Other than in 2017, 332 mt of OFC were tested as C samples of which 77% were accepted. C samples means seed lots which are stored for long durations and checked periodically for quality. .

In 2018, total OFC seed production was 1991 mt and 89% of the productions were certified. It was an increment of 26% when compared to the 2017. The quantities tested and percentages accepted from different sources are given in Table 09.

Table 06: Quantities of OFC seed tested in 2016, 2017 and 2018

Source	**2016**		**2017**		**2018**	
	Quantity tested (mt)	**Accepted %**	**Quantity tested (mt)**	**Accepted %**	**Quantity tested (mt)**	**Accepted %**
Research stations	2.4	69.7	2.3	89	1.76	95
Govt. farms	82.7	91.7		81	1,009.5	89
Contract growers	1,481	91.4	N/A	86	970.7	89
Private growers	6.7	83.9		71	9.6	88
Total	1,573.3				1,991.6	

5.3. Certification of vegetable seeds

Registered extent for vegetable seed production in 2017 was 156 ha of which government and contract growers accounted for 66%. Total extent of vegetable seed production showed 77% increment in 2017 when compared to the year 2016. Registered land extents under different sources and seed classes are given in Table 08. Tomato, Okra, Chilli, Red onion, Big onion, Snake gourd, Bean, Brinjal, Bitter gourd, Radish, Luffa, Capsicum, Yard long bean, Cucumber, Pumpkin, Amaranthus, Vegetable cowpea, Winged bean, Water melon and Papaya (fruit seeds) were in the seed production programme.

Registered extent for vegetable seed production in 2018 was 208 ha of which government

and contract growers accounted for 76%. Total extent of vegetable seed production programme illustrated 36% increment in 2018 when compared to the year 2017. Registered land extents under different sources and seed classes are given in Table 07. Tomato, Okra, Chilli, Red onion, Big onion, Snake gourd, Bean, Brinjal, Bitter gourd, Radish, Luffa, Capsicum, Yard long bean, Cucumber, Pumpkin, *Amaranthus*, Vegetable cowpea, Winged bean, Water melon, and Papaya (fruit seeds) were also included in the seed production programme.

Table 0 7 Summary of Vegetable seed production extents (ha) by class and source in 2016, 2017 and 2018

		2016			2017			2018		
Source	**Seed class**	**Extent registered (ha)**	**Extent accepted (ha)**	**Accepted %**	**Extent registered (ha)**	**Extent accepted (ha)**	**Accepted %**	**Extent registered (ha)**	**Extent accepted (ha)**	**Accepted %**
Research stations	Breeders	1.71	1.21	70	1.34	1.16	87	1.48	0.83	56
Govt. farms	Basic	1.42	1.21	85	12.63	11.50	91	10.72	10.72	100
	Standard I	19.5	14.4	73	30.40	25.59	84	71.15	29.74	42
	Standard II				1.00	1.00	100	0.2	0.2	100
	Hybrid	0.2	0.2	100	1.02	0.87	85	1.21	1.21	100
Contract growers	Standard I	30.79	20.63	66	36.01	28.71	80	70.01	40.07	57
	Standard II				20.71	20.41	99			
	Commercial I				1.10	1.10	100	5.72	5.52	97
Private growers	Standard I	34.81	26.01	74	47.40	39.70	84	42.47	36.29	85
	Commercial I				4.60	4.20	91	5.47	5.47	100
Total		88.43	63.66	71	156.21	134.24	86	208.43	130.05	

During the year 2017, total vegetable seed production was 48 mt of which 37 mt were certified. It was a 67% increment when compared to the year 2016. Quantities tested and percent accepted from different sources are given in Table 08. During the period, 69 mt were tested as C samples of which 95% were accepted.

During the year 2018, total vegetable seed production was 81 mt of which 67.7 mt were certified. It was a 69% increment when compared to the year 2017. Quantities tested and percent accepted from different sources are given in table 09.

However, as the case with private sector produced seed paddy which is traded without SCS labels (Table 5) in vegetable seeds too, this private sector does not await final labelling by SCS prior seed marketing.

Table 08: Quantities of Vegetable seed production in 2016, 2017 and 2018

Source	2016		2017		2018	
	Quantity tested (mt)	Accepted %	Quantity tested (mt)	Accepted %	Quantity tested (mt)	Accepted %
Research stations	0.30	91.25	0.11	98	0.17	94
Govt. farms	7.55	86.17	27.1	82	44.2	86
Contract growers	11.56	95.93	14.9	67	29.7	83
Private growers	9.27	94.33	5.9	72	7.1	71
Total	28.68		48.0		81.17	

5.4. Seed potato certification

Extents of seed potatoes (variety Granola) in 2016 and 2017 belonging to different seed classes are given in the Table 09. The total extent of land cultivated with seed potato was 77 ha and a total amount of 701mt of popular seed potato variety Granola was certified. A 14% increment of extent registered was noted in 2017 compared to the year 2016. Under the poly tunnels programme 1,087,416 mini tubers were produced in the year 2017 when compared to the year 2016 which showed 20% reduction. Quantities of mini tubers tested from different sources are given in table 10.

Table 09: Extents under seed potato production in 2016, 2017 and 2018

		2016			2017			2018		
Source	Seed class	Extent (ha) registered	Extent (ha) Accepted	Accepted %	Extent (ha) registered	Extent (ha) accepted	Accepted %	Extent (ha) registered	Extent (ha) accepted	Accepted %
	Pre-Basic	0.19	0.19	100						
Govt. farms	basic	5.82	5.41	93	16.72	16.3	98	28.44	27.76	96
	certified	50.51	49.20	98	0.13	0.13	100	34.79	28.93	82
	Certified II				39.11	38.51	98			
	Hybrid									
Private growers	Certified 1	10.93	10.93	100	20.24	20.24	100	15.00	15.00	100
	Certified 11				0.81	0.81	100			
Total		67.45	65.73	97	77.01	75.99	97	78.23	71.69	91

Table 10: Production of mini tubers of Potato

Source		**2016**		**2017**		**2018**	
			Mini tubers No.		**Mini tubers No.**		**Mini tubers No.**
Govt. farms	No. of Plants	50,067	877,980	86,404	769,735	201,664	831,528
	Extent (m^2)	1,961	333,959	1543	224,109		71.2 MT
Private growers	No. of Plants	4,710	73,102	18,401	93,572	11,065	121.02MT
	No. of pots	1,970	18,925				
	Extent (m^2)	400	60,000			480	26MT
Total			1,363,966		1,087,416		218.22MT

Extents of seed potatoes in 2017 and 2018 belonged to different seed classes. The total extent of land cultivated with seed potato was 78 ha and a total amount of 982mt of popular seed potato variety Granola was certified. There was a slight increment of extent registered while certified production increased slightly by 9% in the year 2018 when compared to the year 2017. In the poly tunnels programmes, 831,528 mini tubers and 218 mt of mini tubers of basic classes were produced in the year 2018. Quantities of mini tubers tested from different sources are given in Table 10.

5.5. Certification of planting materials

A total of 704,101, 577,777 and 1,036,156 fruit plants produced in respective years 2016, 2017 and 2018 at the government nurseries and private nurseries were certified and labelled (Table 18).

Table 11: **Number of grafted fruit plants certified in 2016 - 2018**

Species	**No. of plants certified**		
	2016	**2017**	**2018**
Mango	328,707	323,160	586,926
Rambutan	109,099	51,334	139,469
Citrus	251,477	184,388	277,158
Avacado	5,081	2,395	5,632
Durian	2,818	4,813	5,155
Jak	4,257	7,831	9,578
Pears	1,653	1,764	8,641
Goraka		1,482	881
Others	1,009	610	2,716
Total	704.101	577,777	1,036,156

5.6. Good Agricultural Practices (GAP) certification

The GAP certification unit has been established under the Seed Certification Service since 2018. GAP extension programme was initiated by the Extension and Training Centre of DOA in 2013 including a certification procedure, but later the Directorate of the DOA decided to establish certification process separately under SCS for technical reasons, mainly to work on improving SL-GAP capacities including auditing, inspection and developing accreditation system in compliance with SLS 1523 GAP standards of 334 farms audited. Over 200 farms were certified as SL-GAP certified farms. Twenty awareness programmes were conducted on GAP and its procedures of auditing and inspection among various stakeholder groups including government officers and farmers.

Inclusion of GAP programme under SCS enhances the public visibility of the SCS as a diverse quality assurance institution of the government, working closely with producers of quality agricultural products in addition to seeds and planting materials.

5.7. Comments on productivity of institution based on outputs and S & T staff strength:

The SCS is a national level institution and operates all over the country with 24 regional stations, 5testing laboratories, 1 seed health testing laboratory, 6 post-control testing farms. SCS has been working on 16 areas including implementation of Seed Act No. 22 of 2003, certification of quality of basic seed and commercial grade seeds (of rice, vegetables, OFC and potatoes) and planting materials, registration of fruit mother plants, Fruit plant certification and nursery registration, laboratory testing of local and imported seeds, evaluation of the quality of imported and local seeds through post control grow out trials, testing for Distinctness, Uniformity and Stability (DUS) of varieties prior to recommend for release, laboratory testing of local and imported seeds for seed health, conduction training and awareness programmes for stakeholders, conducting seed technology research to overcome on field issues of quality seeds, quality assurance of stored seeds denomination of imported seeds prior to marketing, data base management and monitoring, publishing directories of nurseries and seed producers and conducting GAP Certification programme

When considering the outputs identified in above tables, it is clearly shown that SCS has achieved significant progress of outputs during review the period from 2016-18, despite staff shortages and with some constrains in fund allocations, transport and other infrastructure facilities. However, there are gaps and lapses that should be addressed to meet the country needs and especially to face the challenges in agriculture at climate change environment, food security and food safety. Quality SPM plays a vital role in agricultural development and sustainability and therefore, all outputs are significantly relevant to the vision and mission of the institution.

However, the organization should strengthen especially the S and T aspects and seed research especially to help the private sector to overcome serious technological products of quality SPM production failed at field level.

Chapter 06

Overview of the Institution's performance and contribution to national development

A. Contribution to national development

SCS functions as the national regulatory and facilitating body (under Seed Act No. 22 of 2003) of SPM. It ensures the quality of SPM of the listed crops to help improve the national GDP and farmers' wellbeing. This is in addition to certification of farms under GAP programme to enable growers to market their produce at premium levels under GAP certificate. The production of quality SPM is based on the grower demand which in turn is influenced by the grower awareness and material availability. Based on the statistics of quality assured SPM availability in the country at a given season, it is clear that the contribution of SCS to national development is significant. However, we wish to propose a need for a data base on the annual targets of SPM of the recommended crops, the annual extents grown using certified SPM and the projected yield increase as an index for national development.

B. Stakeholder identification and networking

There is a network of national stakeholders under the SCS including all the crop research and development institutes, seed and planting material production organizations, private sector seed producers, seed and planting material importers, seed handlers and retailers. However, there is no IT- based network for information sharing and interaction. Interactions with formal and informal sectors stakeholders in the seed industry need special attention during networking.

Importers and producers of seed and planting materials of agricultural and plantation and export crops, ornamental, medicinal crops, forest plant species and those involved in harvesting, storing, packing and retailing these materials constitute formidable stakeholder entities. Therefore, a need for an IT data base of all these information is highlighted for monitoring and progress reviewing purposes.

C. Internal monitoring and evaluation systems

Mechanism used at present to monitor activities under SCS including GAP certification should be strengthen in terms of enhanced transparency, responsibility and accountability

D. Staff recruitment and training

The DOA is facing a serious crisis on the availability of qualified technical staff to conduct the agreed R and D programmes over the last 7 years. SCS, has a 77 cadre positions for technical staff to carry out its programmes. However, at present it has 37 technical positions filled; giving a clear indication of the disappointing position of the DOA in carrying its national mandate.

We observed that SCS staff has been sent for short term overseas training that may have helped upgrade its technical capabilities to a certain extent (16 in 2016 and 12 in 2017). However, lack of post graduate training opportunities for the staff will affect negatively on the development of this sector in Sri Lanka. SCS has conducted a significant number of training programmes for the local junior staff and private sector stakeholders (7,300 in 2016 and 2,200 in 2017).

Since the breakdown of the recruitment of permanent technical staff to the DOA seriously sets back agricultural development, alternative means such as recruitment of graduates on casual basis should be explored by the DOA under the new government administration.

E. Seed Act implementation

SCS officers both at SCS headquarters and regional stations have been appointed as Authorized Officers under the Act. The regulations pertaining to the Seed Act are yet to be gazette for implementation. The 16 year delay in preparing regulations has led to unscrupulous seed men to exploit the market at the expense of the farmers.

F. Seed research

Seed research in the DOA is mostly conducted by the SCS although not designated to do so even after the long history of the institution. Most of the seed research is applied research to solve practical problems of seed production and storage in the tropical environment.

The scope for seed technology research in Sri Lanka is vast. It is credible that SCS has initiated at least an element of seed research. The following are latest research topics during the period under review.

1. Seed viability: Relationship between seed-borne pathogens and seed viability in rice seeds
2. Seed coating techniques: Vegetable seeds coating with fungicides/ polymers
3. Seed pathology: Identification of seed borne pests and diseases in local and imported seeds
4. Prevalence of introduction of exotic weed species with imported seeds

G. Extension and training

The development of the SPM sector is based on the number of grower community accepting the certified SPM for their cultivation. Hence, training of growers and other stakeholders involved in the SPM industry and government officers engaged in the regulatory activities should be given the highest priority.

Seed extension by the state is a lost priority since the seed industry is mostly privatized. The private sector has own seed extension programmes to market their varieties. However, the

government and especially the SCS, has responsibility to promote enhanced use of quality SPM by the general public. With the strength of 24 regional offices, SCS is well placed to launch island-wide seed quality extension programmes in collaboration with provincial and inter-provincial extension officers. The GAP officers affiliated to SCS field stations should work in unison with SCS staff to promote locally produced seed varieties which need less external inputs and thereby ensure food safety. Regular interactions with all stakeholders should be formalized so that extension needs can be well identified.

Chapter 07

Overall Judgment on the Different Aspects

7.1. Implementation of Seed Act No 22 of 2003 implications and proposals for rectification

The Director General of Agriculture is the custodian of the Seed Act. SCS is designated to implement the seed Act no. 22 of 2003 on his behalf. SCS officers both at SCS headquarters and regional stations have been appointed as Authorized Officers under the Act. The regulations pertaining to the Seed Act are yet to be gazette for implementation. The 16 year delay to prepare regulations has lead unscrupulous seedmen to exploit the market at the expense of the farmers.

The formal sector is composed of an elite group of companies, mostly based in Colombo. Their businesses are affected by the dominant semi-formal and informal sector activities who exhibit low concern for provisions of the Seed Act and the emergence of a “free for all” playground at the expense of the seed user.

The lack of frequent dialogue between all sectors of the seed industry with the DOA has eroded the enthusiasm and capacity of the DOA and the SCS to prepare a verifiable programme to expedite seed law implementation. The formal industry is complaining about the lack of dialogue and expresses frustrations in their industries.

The semi-formal and informal sectors have (please refer 7.1.2 for detailed definitions) their strength in the demand for their seed varieties, some of which are farmer selections of local varieties. The low overheads of the semi and informal sectors and mutual cooperation between its business partners are further strengths to be recognised. At the same time, the semi-formal in informal sectors have capitalized on local germplasm found at village level which are preferred by farmers for their low input requirements and climate resilience which lower cost of production. However, the traditional varieties being composites or genetically heterogeneous may not satisfy the genetic purity standards required by seed law regulations. Therefore, the reviewers recommend that the DOA should consider the following for integration of the semi- formal, informal and formal sectors.

(a) Recognize the traditional village-based varieties as important for seed industry development.
(b) The players in the semi-formal and informal sectors are equally important as those in the formal sector
(c) Launch research to identify and characterize the heirloom /village-based varieties to regularize and bring them to the limelight by publishing their genetic identity traits after fingerprinting in the DOA website.

(d) Make allowances for admixtures and prepare separate minimum standards for

them while adhering only to germination and seed moisture standards as for varieties in the formal sector.

(e) An integrated approach to seed industry development may require amendment of the present Seed Act and its draft regulations because the provisions of the present law are biased toward the formal sector and would not allow survival of the other two sectors if the current regulations are implemented.

7.1.1. Seed and planting material certification

Pitfalls in seed quality assurance is a vital component of seed programmes fulfilling aspirations of farmers. SCS undertakes certification of both seeds and planting materials. In principal, it follows the DOA's crop improvement policy of maintaining genetic purity at the highest level which is in line with those of most countries. Quality of all generations of seeds of all crops from breeder seed to commercial seed classes is assured. The maintenance of high genetic purity norms help production of crops with good attributes including appearance and taste and satisfy both local and international consumers it also help the GAP certification programme. However, overemphasis on genetic purity could be contrary to policies aimed at preserving Climate Resilient genetic traits in traditional varieties.

Planting materials are clonal material and are therefore genetically identical to the mother plant and easily certifiable. However, in the case of seeds, the adherence to genetic purity during seed multiplication is complex. The SCS has the necessary infrastructure to implement scientific certification throughout the country.

However, it must be realized that in seeds, the above norm on genetic purity is practiced only in the formal sector but not in the informal or semi-formal sector seed production systems.

7.1.2. Seed certification in three sectors of the local seed industry

A. Formal sector Companies

The formal sector has focus on domestic seed production and import of seed. Formal seed sector uses basic seeds of the DOA to produce later generations of seeds acceptable to the SCS. The SCS performs field inspection of the growing crop, obtains samples of the produced seeds and tests them in designated Seed Testing Laboratories under the Seed Act and labels the accepted seeds as certified seeds and their quality is officially known and monitored by the SCS. The percentage of formal certified seed produced in the country is low, probably 5 to 10% of the country's requirement of the staple crop at present and to a lesser percent of other field crops and vegetables. The low percentages would be detrimental to the development of the industry run by the main stakeholders and the country GDP in general.

The formal sector is also operating seed imports and distribution. Seed import permits are given by the DOA with conditions laid down according to the provisions of the Plant Protection Act. The emphasis of the Act is prevention of introduction of alien pests and diseases. Imported seed consignments must be accompanied by either a seed test certificate

from a member the International Seed Testing Association (ISTA) or federal government seed laboratory certificate. The SCS samples imported seeds to verify conformity to minimum standards. Genetic purity is also tested via grow out testing.

Seed health of imported seeds is verified at the new Seed Health Testing facility in Peradeniya in collaboration with the National Plant Quarantine Service, Katunayaka. SCS publishes directories of certified seed producers seasonally and planting material producers on an annual basis which serve as ready reckoners to interested buyers of quality certified seeds and planting materials from the formal sector.

B. Semi-Formal sector Companies:

Companies in the Semi-formal sector use some amount of basic seeds of the DOA and most amounts of starting seeds from non-authentic sources at village level and produce generations of seeds with genetic dilution and therefore would not qualify to earn official certification labels from the SCS. Therefore, the SCS is involved only at surface level in the semi-formal sector at present. The percentage of seeds produced by the semi-formal system would be high, approximately 40% of the seed requirement of the country. Their quality is unknown and not monitored by the SCS.

C. Informal sector Companies:

These are small village-based companies which produce seeds of traditional varieties or new found varieties without SCS involvement, the marketed product quality is unknown – especially in genetic composition.

The informal sector does not obtain basic seeds from the DOA but produce seeds of popular varieties at village level. The varieties are high in genetic diversity but have not involved the SCS at present. Like in the semi-formal system, the percentage of seeds produced and the quality is unknown and not regularly monitored by the SCS.

However, SCS has launched Market Surveys recently where samples are obtained from retailers marketing seeds originating from all sectors and subjected to testing their quality in the seed laboratories and growout testing fields. Field days are held to educate seed producers, importers and users on the quality of seeds available in the market.

7.2. Challenges facing the DOA/SCS

Given the low (5-10%) coverage with quality assured locally produced seeds in the country, the DOA is facing a major challenge despite its progress in crop improvement research and a Seed Law under its command. The known potential of 20 - 25% yield increment with the use of quality seeds alone appears distant at present because of the low coverage. The deficiency significantly affects the GDP and farmers' income.

7.2.1. Planting material certification:

The Seed Law covers both seeds and planting materials including perennials and therefore requires the SCS to certify fruit plants, planting material requirement of the plantation sector (coconut, tea, rubber and other export crops) ornamentals and forest plant species. Realizing this enormous responsibility, the SCS has authorized government organizations responsible for those crops to certify own planting materials in their domain under the supervision of the SCS.

The SCS is certifying fruit plants, horticultural planting materials and ornamentals produced by DOA farms and private nurserymen. However, the main producer of planting materials of DOA varieties remains the SPMDC. The SPMDC was marketing materials with two kinds of labels, (a) with authentic SCS certification labels and (b) below par materials with own labels.

The review also found in particular that the coconut seedlings being marketed as “certified” by the Coconut Cultivation Board/Coconut Research Institute were below par. Therefore, a strong monitoring system of the affiliated government organizations should be implemented.

The ultimate goal of the SCS should be to ensure that the local farming community receive quality assured seeds. Given the diversity of the industry players, it is recommended that efforts should be made to educate all categories of companies in order to streamline the equality assurance system. A strong education and training program should be implemented for SPM producers, importers and retailers over a period of next 2 years to confirm to the provisions of the present Seed Act or a revised version of it. Thereafter, SCS should fully implement the regulations.

7.2.2. DUS testing

Testing for Distinctness, Uniformity and Stability of new candidate crop varieties pending official acceptance as varieties is mandated to the SCS since 1984. It is also covered under the Seed Act in the definition of “variety”. The DOA or any other state or private crop breeding organization is obliged to obtain the DUS test report from the SCS prior to variety registration. Once the new variety is registered, the crop breeding organizations would benefit by a future Plant Variety Protection (PVP) law in the country. The SCS has installed the necessary infrastructure for DUS testing.

7.2.3. Seed research

Historically, since independence, researchers have concentrated on crop improvement and plant protection. Although seed research should have been given some emphasis, the lack of prioritization is the reason for low investment in infrastructure and dearth of seed scientists in the country.

Seed research in the DOA is mostly conducted by the SCS although not designated to do so even after the long history of the institution. Most of the seed research is applied research to solve practical problems of seed production and storage in the tropical environment.

The scope for seed technology research in Sri Lanka is vast. It is credible that SCS has initiated at least an element of seed research. The following are research topics during the period under review.

1. Seed viability testing
2. Seed coating techniques
3. Seed pathology

7.2.4. Training

SCS has a training unit headed by an Assistant Director. Training involves officer training within the SCS and elsewhere in the DOA and provinces, and stakeholder training. Following training programmes have been conducted during the review period.

1. Identification of varieties
2. Quality seed production
3. Pest and disease control
4. Maintenance of mother plants
5. Awareness programmes for import seed handlers
6. Seed testing procedures
7. Awareness programmes on Seed Act
8. Seed certification procedures
9. GAP programme as a separate sub unit under SCS

Chapter 08

Proposals for Improvement: Recommendations

The SCS is an organization that collaborates with both the public and private sector seed producers and importers and retailers. It is empowered by statutory responsibilities under the Seed Act No. 22 of 2003. SCS has the responsibility to play a pivotal role in seed industry development. The review team recommends the following as fundamentals.

The broad objectives of the SCS should be to guide the seed and planting material industry composed of the following categories to provide quality seed and planting materials to the farming community.

1. Government sector stakeholders: SPMDC, HORDI, RRDI, FCRDI, CRI, CCB, NBG, TRI, Forest Department, RRI, etc.
2. Private sector Stakeholders: Formal sector; Semi Formal sector, Informal sector; Nurseries; seed and planting material exporters.

It is necessary to consider the diversity of this clientele who expect timely service to produce and market a large number of products of local and foreign origin. It is a complex task operational throughout the year which needs constant planning and execution to fulfil aspirations of all the stakeholders including the end product users.

8.1. Improve income generation by SCS

1) Revise DUS testing fees to compensate the basic expenditure (already published for public hearing)
2) Field registration charges
3) Seed labelling and sealing
4) Quality assurance sticker
5) Authorizing charges/ reauthorizing charges from other state sectors: CRI/ RRI/ MEC
6) Training of private sector personal on seed testing / certification
7) Field registration charges for private growers

8.2. Establish a Technical Steering Committee

In order to be efficient and accountable, it is recommended to install and operationalize a SCS Steering Committee (SCS SC) empowered under the Seed Act. This component needs amendments of the present Seed Act. The composition of the SCS SC should represent both government and private sector interest groups but however, limited to five representatives. SCS SC should be headed by an independent Chairman appointed by DGA. An Ex-Officio representations should be Director SCS and Head of the Units (i.e. Variety DUS, FI, Publicity Unit, Seed Act and Finance.

The proposed TOR of the Steering Committee

1. Periodic review of progress to serve all the stakeholders
2. Seed Act implementation; review of standards, and make recommendations to National Seed Council
3. Review and recommend coordination with Plant Quarantine to ensure qualities of imported seeds and planting materials
4. HR improvement

8.3. Revise the organizational structure

1. SCS must be up-scaled in the DOA hierarchy to play a leadership role in the industry from the current sober state to become a dynamic catalyst.

2. The formatted approach for human resource recruitment and development within the DOA has resulted in lack of quality staff to implement the quality assurance programme. It is recommended that the DOA hierarchy would consider infusion of only selected quality staff into the organization.

3. In order to strengthen the essential activities undertaken by SCS, the severe shortage of trained staff and extremely strained but essential transport facilities for the field staff need to be resolved.

4. Furthermore, deployment of untrained field staff, haphazard transfers of officers from within the DOA and the provincial administration into the SCS without prior notice has morally affected the existing dedicated staff. Consequently, the working capacity of the SCS is stretched beyond limits. It is strongly recommended that the organization re-focuses its activities to prune down appendages immediately and serve the farmer and development of the seed industry.

5. The existing focus mostly on the quality control in the formal sector and not the informal sector is a serious handicap to development of both sectors.

6. It has to play a more important proactive role in quality seed production than concentrating on quality control of the finished product. This interaction is especially required in the informal sector.

7. The Seed Act has been without regulations for over sixteen years. It affects implementation of a very important legislation by which farmers would be protected.

8. Private sector has least regard for farmers' complaints because of the lapses in regulations. Instances where the SCS has intervened to obtain compensation for farmers when large losses due to inferior seeds have been marketed were noted. However, if the Act would be fully operational, farmer's rights to good quality seeds could be assured.

9. The mechanism for appointment of Authorised Officers under the Act, and their performance should be reviewed periodically to improve transparency.

10. The SCS has undertaken seed research, although it is not officially empowered to do so by the SCS act. It has the most number of qualified scientific staff to undertake seed research in DOA. Therefore, it is recommended that this mandate be given officially to the SCS. The recent strides made by the organization to install seed health testing facilities affiliated to the Central Seed Testing Laboratory at Gannoruwa are commendable.

11. Field problems with regard to seeds and planting materials are enormous in Sri Lanka especially in the climate change scenario. The seed industry needs a vitalized R&D apparatus to run their mandated activities efficiently and effectively. Comparatively, Thailand and Bangladesh have progressed significantly in seed research. Seed research is also vital for implementation of the Seed Act where regulations have to be based on scientifically validated information under prevailing conditions in Sri Lanka. It is also strongly recommended that scientific staff when recruited to the DOA, high priority be given to notable staff allocations to strengthen seed research by the SCS.

12. Prevent unacceptable le establishment of units by the government sector violating the mandate given to SCS. *i.e.* The Wayamba Provincial Council is operating a Seed Testing Laboratory, specifically to enhance seed testing procedure centred at Gannoruwa "to save time spent"?. The team argued to say that this decision is unwanted requiring some major changes in the SCS machinery in another part of the country, wasting public funds.

13. Observed the violation to the Seed Act the duality of seed and planting material quality assurance within the DOA was quite disturbing. For instance, DOA was marketing planting material in two kinds of labels; one is fully certified while the other is quality assured. This leaves doubt in the mind of the public, and must be rectified.

14. SCS has authorized external agencies such as the Coconut Cultivation Board to undertake certification of coconut seedlings on its behalf. Although it is understandable to devolve activities, instances of poor quality coconut seedlings being marked as "certified" when they were below par were seen. Better supervision of external agencies through an annual audit and implementation of a scientific accreditation programme is recommended.

15. Inadequacy of staff training and infusion of untrained senior staff from outside the SCS has (1) eroded the public confidence in the SCS and (2) fuelled the introvert attitude of the staff and their somewhat authoritative behaviour in the field. It is recommended that a complete overhaul of the training unit be carried out for need based training development.

16. The general public is unaware of the many services and information the SCS could

offer, such as on seed science and technology, provisions under the Seed Act, latest seed standards, the value of good seeds, how to select the best seeds and planting materials, differences in seed quality based on all kinds of labels put out by seed companies and nurserymen, the correct and winning procedures for making complaints regarding seeds and planting materials, the most reliable sources to buy local and imported seeds, etc. There is no parallel service from which the public could gather seed information other than the SCS. It is therefore the responsibility of the SCS to overcome the deficiency by creating a dedicated Publicity Unit to create public awareness on seeds.

17. Field problems with regard to seeds and planting materials are enormous in Sri Lanka especially in the climate change scenario. The seed industry needs a vitalised R&D apparatus to run their businesses efficiently. Comparatively, other countries have progressed significantly in seed research. It is also vital for implementation of the Seed Act where regulations have to be based on scientifically validated information under prevailing conditions in Sri Lanka. It is also strongly recommended that scientific staff when recruited to the DOA, high priority be given to notable staff allocations to strengthen seed research by the SCS.

18. The seed research programme should be initialized under the SCS to upgrade the mandate of the SCS. The required man-power needed to establish a seed research is one of the pivotal establishment in different agriculture sectors in other countries. This research programme should be upgraded with cutting edge science of seed technology etc. some of which are listed below.
    1. Introducing bar code system for seed label.
    2. GPS mapping system for mother plants.
    3. Cold room facilities for all Seed testing laboratories.
    4. Introduction of molecular detection methods for seed health testing.

8.4. Organization and Management: Additional observations / Suggestions

Considering the vital role played by the SCS, in upgrading the national productivity of the crop sector, the subdued existence of the SCS within the DOA is considered detrimental to the development of the seed and planting material industry in the country. Further, the shortfall in the governance of the organization under the Seed Certification and Plant Protection Centre of the DOA has contributed significantly to the restrained nature of the SCS. The SCS should be allowed to bloom in order to be recognised by the seed industry stakeholders, big or small. It is highly recommended that the situation be remedied immediately through an internal restructuring of the DOA whereby the SCS is directly supervised by the DGA.

Direct transfer of technical staff from elsewhere directly to the SCS without verification or approval of Director SCPPC and the Additional Director SCS have caused frictional issues to good governance. It is serious because a quality control organization with legislative clout should always rely on screened staff with honesty, technical capability and good public

relations.
As an organization covering activities throughout the island, a dedicated staff for extension and training of farmers to promote quality seed and planting material production and use are vitally important; The capacity, capability and competence of the Extension and Training Staff under Provincial and Interprovincial systems in carrying out the above activities need to be revisited, assessed to remodel to improve the effectiveness and efficiency of the structure.

8.5. Good Agriculture Practices (GAP)

It is proposed to review and revitalize the commendable GAP certification system introduced by the DOA, considering the vast scope and increasing demand for GAP certification (> 15% increase in incomes by GAP farmer) for local and export market. It is evident that the basic concept of GAP certification has been infiltrated into other organizations for actions such as Sri Lanka Standard Institute, and may - be the Department of Health Service – (under Food Act No. 26 of 1980). Hence, it is timely that DOA initiate discussions with other organizations responsible for food safety standard development to move towards establishing a sustainable food safety and environment health procedure through GAP. It is strongly felt that the competence in agriculture technology available in the DOA can embrace this vital system in Sri Lanka. And infiltration of this concept to other non- agriculture systems may do harm than help Sri Lankan agriculture system.

In order to develop a strong system for GAP certification, the DOA should consider establishing a separate division with strong team players, network facilities and an awareness programmes and links with international organisations. In parallel DOA should seek assistance from experienced organizations for setting up network facility, laboratory system, auditing system etc.

8.6. Climate smartness

Consideration for the climate is a prerequisite for any development venture. For effective adaptation to climate change in the agricultural sector, several adaptation tools, including management options and technologies should be considered. Given the current SCS requirement for repeat field visitations, three to four times per season to every seed producer in the country, the carbon foot print of seed certification must be high. SCS managers at headquarter level and regional levels need to conscientiously device systems to minimise their C-footprint. Some suggested management options are as follows but not exhaustive. The SCS managers could tailor more options.

1. Limit SCS involvement to those activities which yield the most in terms of return to investment and prune fancied but marginal programmes. For example, registration of ornamental plant nurseries and certification of ornamental plants: may not be cost effective at present.

2. It may be possible to minimise the number of visits by tracking and linking producer records on the database on regular compliance to SCS norms. Those producers with

a good track record could be visited minimally.

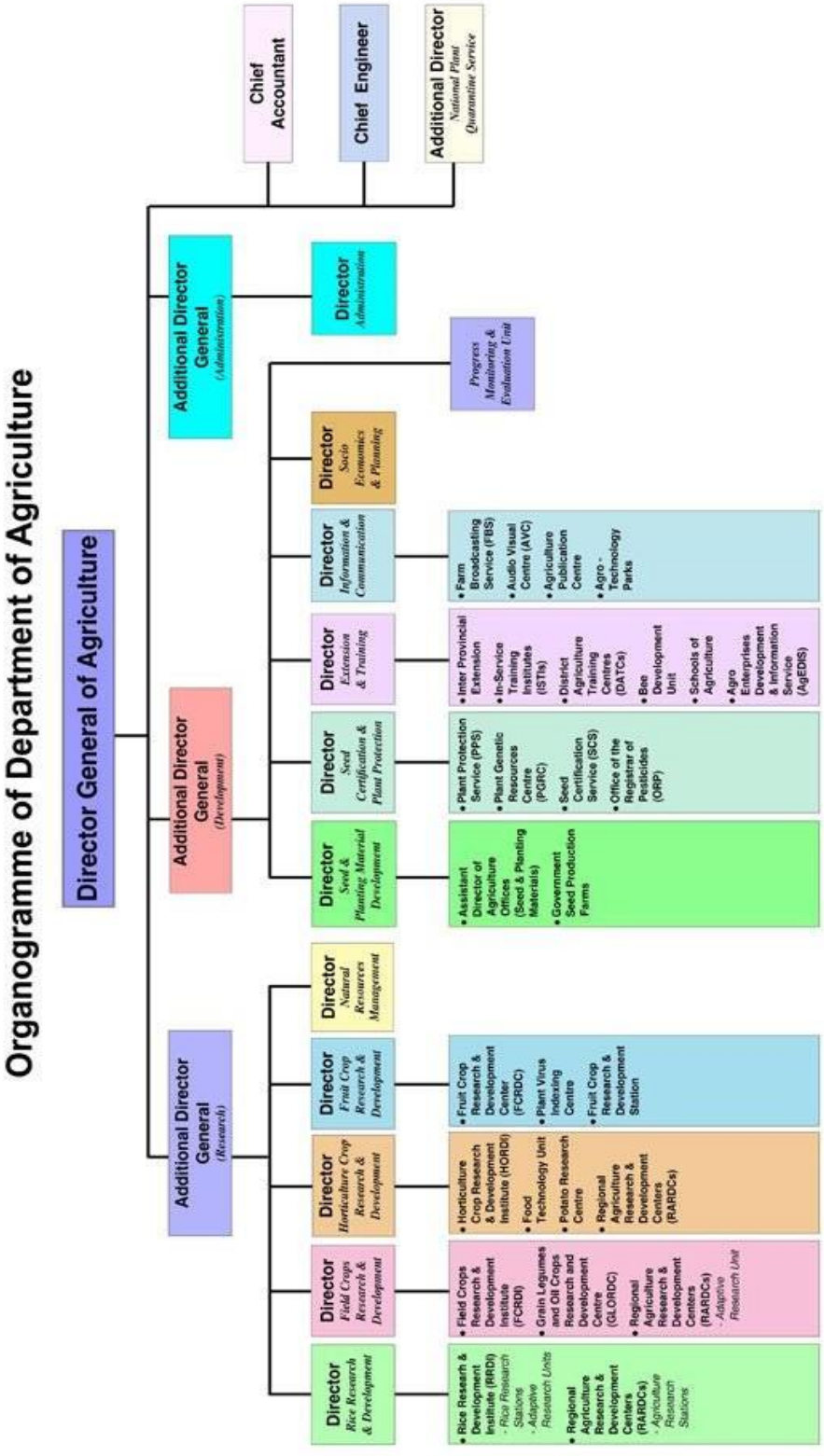
3. Field staff could use weather information to advice seed producers by telephone on appropriate actions that need to be taken to minimise seed water content rather than visiting them for seed sampling when the producer has not taken action to protect the seeds from wetting. Repeat visitations for sampling the same lot could thus be minimised.

4. Government farms and research stations should be given moisture meters to monitor seed moisture and inform SCS when lots are ready to be sampled. SCS should encourage procurement of moisture meters by seed producers from reliable sources.

5. Seed producers may also be encouraged to purchase moisture meters (on a credit line if needed) and inform SCS for sampling only when the seeds are dry and below the maximum allowable moisture percent.

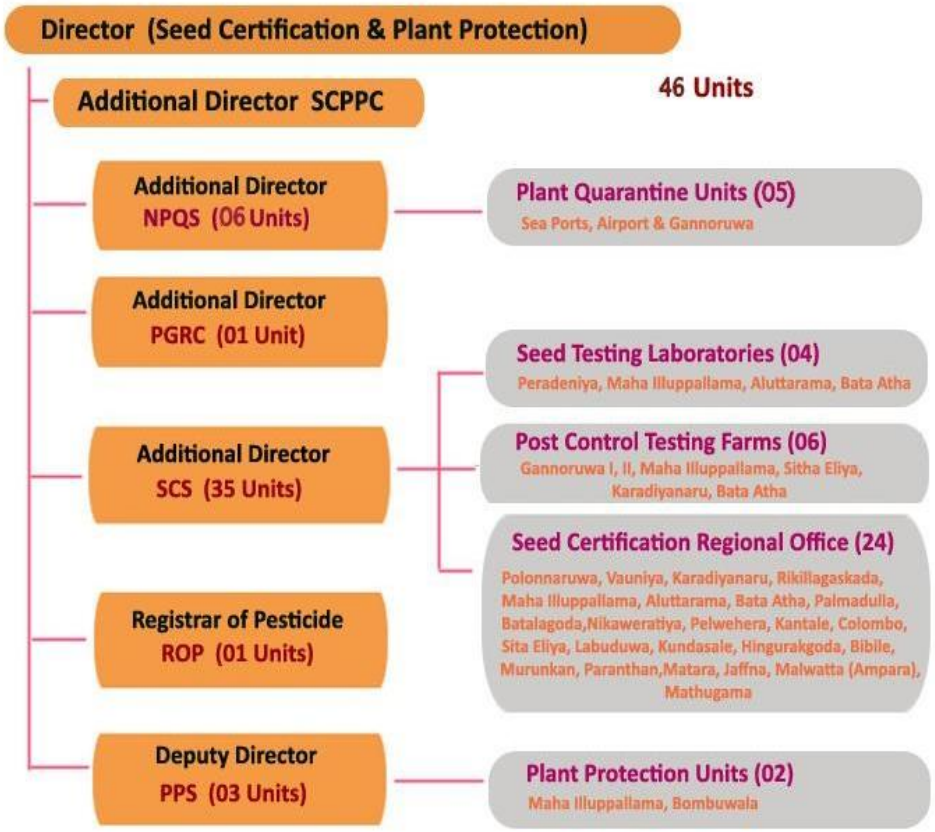
6. GIS technological options are many. For example, provision of data capture devices such as Network tablets to SCS field officers to communicate field data/pictures via WhatsApp, etc. would minimise paper correspondence, improve officer traceability with minimum expenditure to the management.

Annexure -01 Existing Organogram of the DOA



Annexure -02

Existing Organogram of the SCPPC

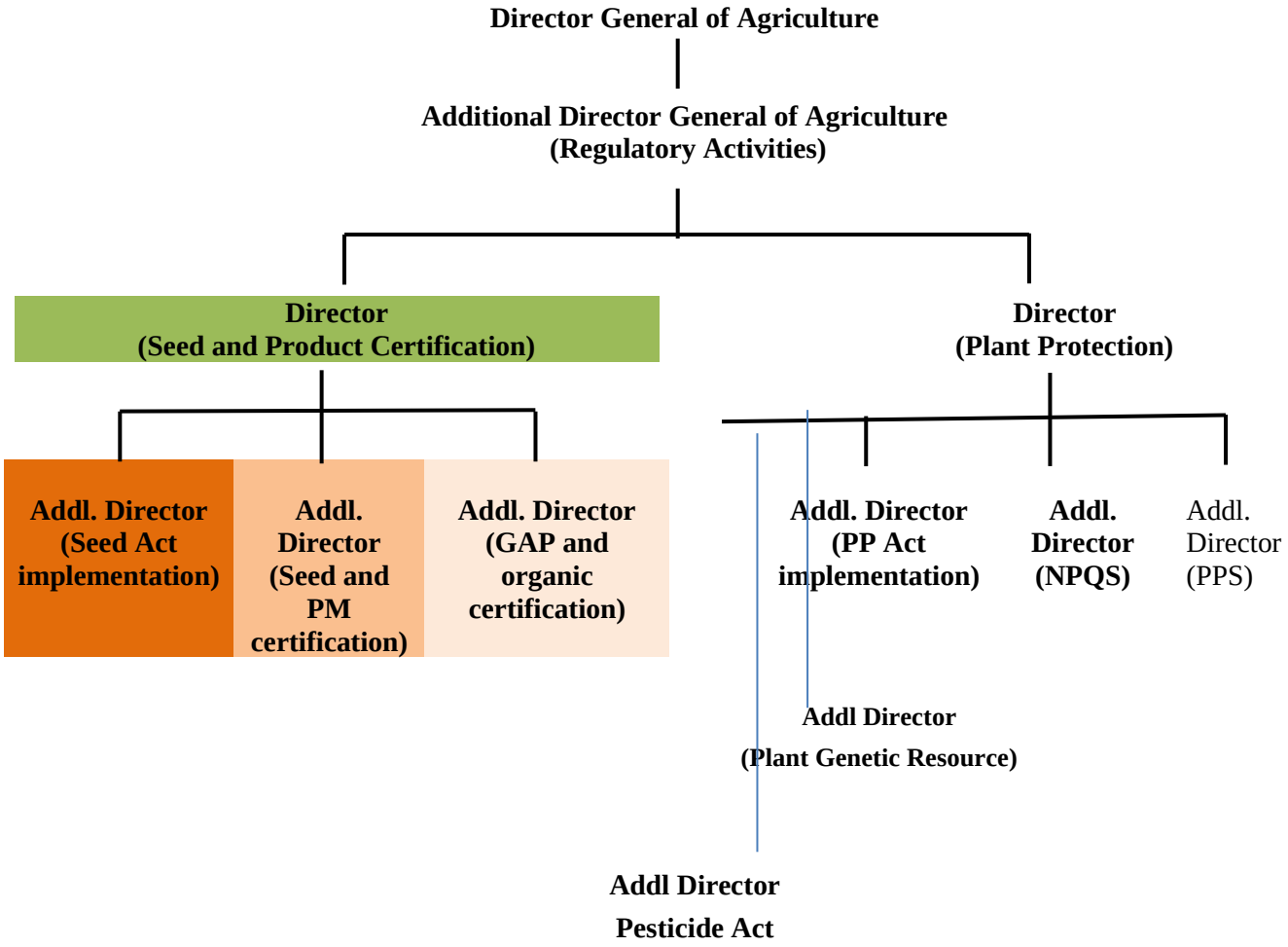


(Source www.doa.gov.lk)

Revise Read Testing laboratories (04) to read as Seed Testing Laboratories (05) and Seed Health Testing Laboratory (01)

Annexure-03

Restructuring proposal for SCPPC



Annexure-04:
List of Informants interviewed

1. SCS staff Gannruwa: Dr MGD Lakmini Priyantha (Add D/SCS); Mr.S.A.M.R. Abeykoon Assistant Director (Development); Mrs.K.K.S.D.Pradeepika Assistant Director (Development); Mrs.R.A.I.S.Ariyarathna Assistant Director (Development**);** Mr. R.N Premakumara, Assistant Director (Development); Mr.D.W.K.Kodithuwakku Assistant Director (Development); Mrs.Y.M.H. Liyanage Assistant Director (Development); Mrs.H.R.U. Erabadhupitiya Assistant Director (Development);

2. SPMDC Staff, Peradeniya
   Mr K.D. Pushpananda, Director (Seed & Planting Material); Mr H.M.S.P. Herath
   Additional Director of Agriculture, Ms W.M.Dayawathie, Additional Director of Agriculture; Mrs D.M.Thamara Kumari, Deputy Director of Agriculture (Paddy), Mrs Ramani R.Senarath Deputy Director(Vegetable Seed);

3. FIELD VISIT SITA ELIYA 29 May 2019
   Seed potato production programme (SPMDC) Aerophonic G0 production programme: Tissue culture seed-potato production; Vegetable Seed Dealers /
   ADA/ SPMD
   Mr Nadeesha Gamage, AI/Extension and Mr Jayathilaka Kaushalya, AI/Extension Seed Farmers

4. FIELD VISIT TO NAULA/ KIMBISSA ASC/ DAMBULLA/ PELWEHERA/ JUNE 10, 2019: Naula, Pelweheraa, Kimbissa, Galkiriyagama.
   Big Onion Seed Producers Pelwehera–
   Seed Dealers: Naula Maize seeds, Mr Nimal Ranatunga; Mr HM Punchihewa. Ground nut seed dealers/ Farmers / Maize Seed Dealers
   Sara Lanka, Dambulla; Pelvehera SCS:
   Dr GMW Chitral (CIC Farm Pelwehera) and Staff/ CIC
   Samastha Lanka Desiya Beeja Nispadakayange Sangamaya
   Mr Nimal Ranatunga, Mr HM Punchibanda, Mr GA Piyaratna, Mr Abeykoon Banda Mr MGG Mahindaratna; 148, D Pansal Junction, Digampathaha, Kimbissa
   Mr TG Senaviratna, Digampathaha, Kimbissa, Mr WM Asela Sanath Kumara, Etawara Hena, Inamaluwa Mr AGRD Amitiyagoda, AI, Kimbissa, Mr SMR Abayalal, AI, SCS, Pelwehera, Mr AMJSB Adhikari, Mr CW Ghanasekera, Mr WM Thilakaratna, Ibbankatuwa, Dharshana Plant Nursery- Mr Palitha Weerasinghe

5. Seed And Planting Material Association Of Sri Lanka; AGRICULTURE TRENDS PVT LTD, COLOMBO, 4 JULY 2019
   Mr Mahendra Coore, Mr Sharm De Alwis, Onesh Agri, Mr Aruna Kumarasinghe, Agstar Seeds Mr Waruna Madawanarachchi, CIC seeds, Mr Aruna Weerakoon, Agro-culture Trends

6. SEED CERTIFICATION SERVICE, JULY 15, 2019
   Mr KSB Abeysinghe, Mr EMRA Ekanayake, Mr RB Chandrasoma, Mr MSK Godawita Mr Jayasiri Premaratna, Mr DM Senaviratna

7. **WORKSHOP ON SEED ACT, AUGUST 9, 2019**

   Dr RSK Keerthisena (Addl DGA), Mrs. H.M.J Ilankoon Menike (Addl DGA), Mrs. JKA Hettiarachchi (D/ SCPPC): Dr MGD Lakmini Priyantha (Add D/SCS); Dr G Samarasinghe (D/ HORDI); WT Geetha Ranjini (Principal Agriculturist); Sanath M Bandara (ADA); KMCD Karunaratna (ADA); RN Premakumara (ADA), Dr

   RMR Herath, D/ SEPC; GJK De Zoyza (AMO); Mr HMRW Heratha, SCS; Mr LMGA Bandara, SCPPC; Mr Wasantha Gunapala, SCS;

8. **Representatives from MONLA and Farmer Organizations**
   (About 23 Participants attended)

   Mr Chintaka Rajapakse, Mr JA Vimukthi Silva; Dr Jayatilake; Mr PR Somasiri; Mr T Terrance Gamini; Jayathilaka; Mr MK Jayatissa; Ms. Shemila, M Renuka, Mr Tilak Kariyawasam, Mr JM Soorasena, Mr SMG Samarakoon, Mr U Jayathilaka, Mr DR Jayathilaka, Mr JB Randeniya, Dr DLAH Shammika, Mr IP Saranapala, Mr Renuka Sampath, Ms Indika Priyanthi, Mr Ranjith Senaratne

Annexure -05

Management Assessment: Seed Certification Service

(1) **Always** used/ always considered/ involved/analysed	= **S**trong
(2) **Occasionally** used/ considered/ involved/analysed	= **M**oderate
(3) **Not** used/ Not considered/ Not involved/Not analysed	= **We**ak

i) **Assessment of Institutional Response to External and Internal Environment in Planning Organizational Strategy**

Management practice	Level of Practice (Performance Indicators)			Comments / Evidence
	S	M	W	
Government policies and development goals are used/ considered to establish goals and plan organizational strategy for the institution		✓		National Seed Policy Of 1996 is implemented. Institutional weaknesses such as shortage of trained manpower, funds, etc. prevent full compliance with government policies.
The organizational mandate (as specified by the relevant Act) is considered in strategic planning	✓			Strategic Plan follows the DOA mandate with respect to seeds and planting materials development and quality assurance.
The institution is responsive to changes in Government policies and strategies	✓			Always falls in line with government policies
Factors such as strengths, weaknesses, threats and opportunities are considered in strategic planning		✓		SWOT analysis considered occasionally
Stakeholders needs are taken into consideration in strategic planning		✓		National level stakeholder needs are taken into consideration but not prioritized during planning because Requests are received throughout the year and therefore, difficult to include in initial planning
The Board of Governors is involved in strategic planning		n/a		There is no Board of Governors at present. Directorate of the DOA together with the Director (SCPPC) is responsible for the strategic planning.
The extent to which staff members are involved in strategic planning		✓		Additional Director (who is the Head of the organization), Deputy Director, Assistant Directors, Agriculture Instructors are involved. Therefore, inadequate.
Government allocations and alternative funding opportunities (donor funding) are considered in strategic planning	✓			Line budgeting for DOA is inadequate for disbursement to peripheral units
The extent to which policies and plans of the organization are reviewed and updated		✓		Irregular progress reviews affecting programme updating

Additional observations
The SCS has to be dynamic to cater to needs of large clientele of stakeholders country-wide. SCS activities should be planned strategically according to targets decided at the forums/meetings with stakeholders and policy makers. The existing system needs to be strengthen to cater the country needs/demands preparing corporate plan on time, improving capacity of staff and resources.

ii) Planning S & T programmes and setting priorities

Management practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	S	M	W	
National development goals are considered in planning programmes & setting priorities	✓			Annual activity plan is in line with government resource allocations given
Board of Governors participate in planning and priority setting of programme		n/a		There is no Board of Governors at present. Directorate of the DOA together with the Director (SCPPC) is responsible for the strategic planning, priority setting of programmes.
The extent to which the staff of the institution participate in programme planning and priority setting		✓		Additional Director (who is the Head of the organization), Deputy Director, Assistant Directors, Agriculture Instructors are involved. Therefore, participation of the Directorate of the DOA is vital.
Stakeholder interests are considered in programme planning		✓		Considerations are inadequate
The extent to which programmes are planned and approved through appropriate procedures	✓			All procedures are according to local and international standards
The extent to which the availability of funds (government allocations and other funds) generating funds are taken into consideration in planning programmes	✓			All programmes are planned according to available funds
The obtaining of necessary equipment is considered in planning programmes	✓			Always considered
Stakeholders are represented in the institution's planning and review committees.		✓		Private sector stakeholders are not represented at planning and regular review levels.
The extent to which socio economic and commercialization of aspects are considered in programme planning.	✓			Programme planning is in line with commercialization of the seed and planting material industries
Effectiveness and efficiency of institutional procedures in approving new S& T programmes.		✓		Need to get consent from relevant disciplinary working group meetings (Agronomy and plant pathology) Effective and efficient system in approving new S & T programmes

Additional observations
The SCS is predominately a service organization catering to the needs of the seed industry. However, S &T programmemes operate in a few activities such as seed quality assurance, seed storage studies, plant quarantine-based evaluations, etc.
There is a need for establishing a mechanism for regular interaction with stakeholders to strengthen the planning and setting priorities

iii) Planning S & T / R & D Projects

Management practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	S	M	W	
The staff is provided with guidance for project planning	✓			Staff are regularly encouraged to timely submit project proposals
previous research results/data are used for planning projects	✓			
The extent to which the institution follows a formal process for preparation, review and approval of projects	✓			
The extent to which organizational plans (e.g. medium-term plan, corporate plan, strategy etc.) are used to guide project selection and planning		✓		The Department of Agriculture which is the governing body of this centre, has to provide national level corporate plans for its divisions
Multidisciplinary projects/ activities are encouraged by the institutions		✓		Existing seed research in collaboration with Plant Quarantine service, seed and planting material development center, and research institutes need to be strengthened
Foreign collaborations are encouraged and incorporated in planning.			✓	need to be strengthened
Partnership with private sector is encouraged by the institution			✓	No evidence in private sector participation in project planning
The extent to which development research/activities are considered in planning projects			✓	Development research are not prioritised
The extent to which basic research are considered when planning projects			✓	Molecular level finger printing of varieties should be undertaken as basic research
The degree to which adverse effects on environment are considered in planning projects		✓		Emphasis is on promotion of environment friendly local varieties

Additional observations
Research on seed science and technology is at minimal level in Sri Lanka. It's a serious handicap for seed industry development. The SCS should be mandated for this discipline. International collaboration for S&T on seed should be prioritized.

iv) Project management and maintenance of quality

Management Practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	Strong	**Moderate**	**Weak**	
The effectiveness of the procedures for resource allocation at different levels (organization, departments, programme etc.)		✓		Seed certification functions as a unit under a division (SCPPC) of the Department of Agriculture. It is not fully mandated to undertake S&T research and therefore short of resources though there is significant scope for S&T based seed research.
Ensuring that instruments, equipment and infrastructure facilities are sufficient for implementation of projects		✓		Basic provisions are available but need to be strengthened
The effectiveness of administrative procedures and support for project implementation (procurement and distribution of equipment and materials, transport arrangements, etc.)		✓		Finance, engineering and administration divisions under DOA control those subjects centrally and affected negatively for procurement and quality of work.
formal monitoring and review processes are used to direct projects towards achievement of objectives	✓			Quarterly progress reviewing mechanism has been adopted by DOA for all divisions
The extent to which the researchers are supported by the required technical / field staff.		✓		Lack of required trained staff negatively affected S&T activities
Ensuring that established field / lab methods, and appropriate protocols are used	✓			Ensured relevant protocols
Research projects/ S& T activities are completed within the planned time frame.		✓		Cannot completed within the time due to lack of resources and support from relevant divisions of DOA

Ensuring that scientists / researchers have access to adequate scientific information (scientific journals, internet, international databases, advanced research institutes, universities etc.) that strengthens the quality of research.		✓		Inadequate updated technical manuals/ information due to limited resources
The extent to which quality assurance practices are followed by the institutions		✓		Quality management should be considered seriously
Ensuring that researchers/ scientists have access to computers and necessary software		✓		Inadequate IT facilities resulting poor networking

Additional observations

The subject of the project management should be implemented at the headquarters level and therefore, present PMU of the DOA may be strengthened as the project division.

Human Resource Management

Management Practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	S	M	W	
The institution maintains and updates staff information in a database (including bio data, disciplines, experience, publications, projects)		✓		Information system has been developed but yet to be implemented
The institution, plans and updates its staff recruitments based on programme and project needs			✓	Long delay of recruitments at scientific staff level affected the total programme
The effectiveness of the selection procedures and the schemes of recruitment			✓	Recruitments are stalled due to a court case
Training is based on institution and programme objectives and on merit,		✓		HR development plan is not available and Inadequate subject specified trainings
The effectiveness of the procedures in promoting a good working environment and maintaining high staff morale.		✓		Shortages of opportunities to provide incentives such as local and foreign trainings
The effectiveness of staff performance appraisals			✓	Present appraisal format is not strong enough for S&T staff
The effectiveness of rewards and incentive schemes in motivating the staff			✓	Present schemes are not strong enough to recognise the contribution to S&T development
The effectiveness of managing staff turnover, absenteeism and work interruptions.			✓	No available scheme to evaluate attendance and compensate accordingly

Additional observations
Human resource development plan especially for S&T staff grades of the DOA including all the divisions and units is a vital issue.

v) Management of organizational assets

Management Practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	S	M	W	
The ability of the institution to carry out its mandate and the assigned statutory powers		✓		Field staff, laboratories and other infrastructure, finances are available, though insufficient
Infrastructure (buildings, stations, fields, roads) is satisfactorily maintained.	✓			
Vehicles and equipment (lab, field, and office) are properly managed and maintained.		✓		Inadequate number of serviceable vehicles and office facilities.
The effectiveness of procedures to ensure that equipment are in working order		✓		Funds are not enough to go for service agreement
The effectiveness of the institution's overall strategy in generation and proper utilization of funds		✓		Generating funds to achieve objectives is not adequately pursued
The extent to which the institution identifies opportunities for income generation and cost recovery			✓	Being a service oriented institute cost recovery is not considered
The extent to which the intellectual property rights of the institute are protected			✓	Not yet considered as a service oriented centre

Additional observations

SCS is embraces all seed and planting material related activities throughout the country, It is also mandated to implement the seed act. However, its severely handy capped resource wise, operational wise and is virtually a Cinderella organization under the DOA

Its reliance on the existing administrative setup will resulting further degradation of the organization leading to stakeholder criticism and overall crisis in the seed and planting material sector of the country.

Therefore, the organization should be strengthen to perform its mandated functions firstly through a re-organization of the DOA system and empowering the SCS as the key seed and planting quality assurance authority to serve the farmers and the seed and planting industry adequately as a means of ensuring food security in the country.

vi) Coordinating and integrating the internal functions/ units/activities

Management Practice	Level of Practice (Performance indicators)			Comments/ Evidence
	S	M	W	
The extent to which institution is evaluated internally and restructured based on current needs		✓		Internal infrastructure sufficiently upgraded. Most relevant activities such as field inspection, seed testing, seed health research, variety section (DUS) and fruit plant certification are Well-structured and coordinated; however new arms – seed act and GAP certification need to developed.
The effectiveness of internal communication and coordination mechanisms		✓		Internal communication system need to be upgraded with IT based networking.
Institution's overall direction and coordination are provided by a central planning committee / unit.		✓		All functions are centrally and effectively coordinated by SCS headquarters
The extent to which different units are assigned clearly defined functions	✓			The seven units have well defined
Responsibilities of research / management staff are clearly identified	✓			Duties are clearly identified and annul performance appraisals are mandatory
Effectiveness of using appropriate reporting procedures and feedback in management at different levels		✓		Timeliness of feed backs for management decision making is unclear

Additional observations

The functional activities of the SCS such as field inspection, seed testing, seed health research, variety section (DUS) and perennial plant certification are evolved processes therefore these units are comparatively stronger than the new sections like Seed Act and GAP certification. However, there is a strong need for staff recruitment, training and deployment to all sections. Furthermore, efficient networking mechanism should be introduced to strengthen internal communications as this field faces new challenges frequently

vii) Partnership in managing information dissemination

Management Practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	S	M	W	
The institution systematically plans and performs dissemination of information		✓		organized and coordinated mechanism for planning and information dissemination is not strong enough to address the present issues on seed production and quality control
The extent to which the institution plans and maintains linkages with key partners for sharing and dissemination of information		✓		Internal linages within the DOA is strong, however weak involvement with farmers and private sectors is evident
The effectiveness of institutional procedures for technology transfer		✓		Technology transfer mechanism within SCS is not sufficiently developed.
The effectiveness of the system to obtain feedback from different types of stakeholders		✓		Reliance on ad-hoc feedback which is not effective.

Additional observations There is a need for national level coordination of the seed programme involving key partners in the seed industry headed by the DGA. Mechanisms for need identification and information sharing should be formulated at this forum. Existing district seed coordinating committees must be strengthen and regularized for effective stakeholder participation and decision making.

The DOA has a separate arms for Technology Transfer (Ext and Tr Centre – ETC and National Agriculture Information and Communication Centre- NAICC) hence, there should be a strong linkage with SCS on seed related information dissemination.
The internal training unit of the SCS appears weak on HR and infrastructure compared to other divisions of the organization.
Suggest to implement seasonal technology transfer programmes including- training, print and electronic media in collaboration with NAICC and ETC

viii) Monitoring, evaluation and reporting procedures

Management Practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	S	M	W	
The institution monitors and evaluates (M&E) its own activities periodically		✓		The well-established M and E system. However, shortage of resources is hampering implementation
M&E is supported by an adequate management information system (MIS), which includes information on projects (e.g. costs, staff, progress, and Results).		✓		A system has been introduced, but not operationalized.

The extent to which S& T results and other outputs are adequately reported internally (e.g. through reports, internal programme reviews, seminars).		✓		Seasonal M & E programmes are reported in DOA progress review reports,
External stakeholders contribute to the M & E process in the institution.		✓		Interaction with stakeholders within the DOA is active but, external stakeholder contribution is minimum.
The extent to which the results of M&E are used for project/ research planning and decision-making.		✓		No tangible evidence for project planning based on M & E

Additional observations

Although the DOA has its own M & E system under the Progress Monitoring Unit, There is no parallel system in divisions including the SCS. SCS depends on seasonal visitation system for M &E for all regional units. However, this system is financially non-viable and inefficient. There is a necessity for MIS for progress monitoring and evaluation. To operationalize MIS, networking of units is essential.

Annexure 06

Output Assessment: Seed Certification Service

a) Types of outputs

I. Laboratory testing: seed samples tested from public sector and private sector (for local and imported), testing for seed borne diseases
II. Certification of seeds (paddy, OFC, vegetable, potato): registered extent, lot breaking, C-sampling and emergency sampling, imported varieties approved, breeder seeds certified, DUS testing conducted for new varieties, field performance evaluations of test samples of local seeds and imported seeds, market verifications
III. Certification of planting materials for perennials: All fruit crops
IV. Mapping of perennial mother plants
V. In-situ conservation of fruit plant varieties
VI. GAP certification
VII. Implementation of seed act: drafting regulations, registration of nurseries, registration of seed handlers, facilitation of compensating for affected seed users, publishing of updated list of plant nurseries and seed handlers
VIII. Technologies developed and transfers: seed science research, facilitation of official release of new varieties
IX. Trainings: local and foreign staff training, seed producer training, seed handler training, other stakeholder training
X. Information dissemination and publications: advisory leaflets, posters, workshops/seminars, exhibitions, media events, field days, research papers, books and monographs and technical reports

b) Output measurements

Output Category	Nos.			General Comments on quality and relevance of outputs and productivity of institution
	2016	2017	2018	
1. Inspected extent(ha) - Seed paddy - OFC seed - Vegetables and fruits* - potato	 6,089 692 88 67	 4,676 1,900 156 77	 5,545 1,534 208 78	Inspection activities completely depend on available staff and transport. The SCS perform well with the present strength. But due to drought conditions seed production programmes were affected badly. *papaya and watermelon varieties propagated by true seeds are included under the same category of vegetables and therefore, two category codes should be created.
2. Tested seed samples (no.) - Seed paddy (mt) - OFC seed (mt) - Vegetables (mt) - Seed potatoes (mt) - potato mini tubers (no.)	15,484 14,414 594 28 715 13,63,966	15,428 12,739 1,573 48 701 1,087,416	15,301 14,173 1,991 81 982 831,528	Seed testing at four SCS laboratories is depend on the number of sample received by its regional units which is depend on the field programme of the season.
3. Registered fruit plant nurseries (no.)	327	324	336	In addition to new registrations, DOA registered fruit plant

				nurseries are inspected and re-registered annually.
4. Quality certified grafted fruit plants by labelling (no.)	704,101	577,777	1,036,156	Fruit plant certification is progressive as per the growing demand, but drought has negatively affected the production.
5. Selected and labelled mother plants (no.)	235	586	1,100	Registration of fruit mother plants has increased to meet the great demand for fruit trees under many development projects.
6. Evaluated under DUS (no) - Paddy varieties - OFC varieties - Vegetable varieties - Fruits varieties	 06 12 01 -	 11 15 6 1	 09 10 15 2	Before recommending new varieties, DUS testing results are needed. DUS results are submitted to Variety release committee for acceptance.
7. Testing of post control Total No. - paddy - OFC - vegetable - potato - fruits - on other issues	 925 185 195 437 108 - -	 830 120 146 239 108 03 214	 1,109 120 640 105 131 5 108	Post control testing are performed for local or imported crop varieties whenever requested to clarify the quality of seeds and pest and disease susceptibility.
8. Testing of imported vegetable varieties samples (no.)	144	149	163	For imported seeds and planting materials, SCS jointly work with NPQS to determine pathogens and weed seeds in addition to plant characters.
9. Tested seed samples for seedborne pathogens (no.)	70	152	588	Seed pathology lab of SCS, Gannoruwa conducts routine testing for seed pathogens and with the capacity development, SCS has able to expand the programme.
10. Registering seed handlers under the seed Act (no.)	499	917	1758	Seed handlers, who engaged in seed business including importers, local collectors, processors and whole sale or retail traders, should be registered and renewed biannually under the Seed Act.
11. Granted label approvals to producers under the Act (no.)	78	160	619	All labals using for SPM industry should be approved by SCS as per the Act.
12. Handled inquiries related to the Act (no.)	12	21	37	SCS has facilitated to pay compensation for affected seed users from relevant seed companies. (2016- Rs 225,000, 2017- Rs 5,025,000, 2018- Rs 825,000)

13. Publishing updated list of plant nurseries and seed handlers	03	03	03	These publications are extremely important to make the programme more effective and efficient to all SPM stakeholders including field officers, farmers and entrepreneurs.
14. Premises inspected for proper channel of seed marketing under the Act (no.)	251	262	444	The Act has provided the authority to monitor seed handling activities which helps to assure the quality of SPM.
15. Trainings on the Act - no of programmes - no. of trainees	 52 5005	 35 3365	 24 2210	The reason of decreasing trend of training is that SCS had to train many gov officers even outside of the DOA in agriculture sector at the beginning. But the programme is continuing for untrained staff.
16. Field days conducted	04	01	02	Field days are conducted to update the knowledge seasonally at seed production fields whenever a need arise.
17. GPS mapping for mother fruit plants (no. of trees)	-	634	1596	This activity was initiated in 2017 and continuing to cover island wide mapping.
18. In-situ conservation of fruit plant varieties	?	?	?	Data yet to be collected
19. GAP certification - No of farms audited - No of farms certified - Awareness programmes	 - - -	 - - -	 334 201 20	Gap certification service was transferred to SCS in 2018 from the Extension and Training Centre of DOA as per the directorate decision to divide certification process from extension activities and also to centralize all certification activities under the SCS.
20. Research projects handled (no.)	04	02	07	Some of research projects were funded by AFACI, JICA, NARP and the rest from the Gov. Finding opportunities for research projects are prioritised at the moment due to internal constraints, but it should be encouraged.
21. Facilitation of releasing new varieties (no.) - paddy - OFC - Vegetables - Fruits	 04 02 01 -	 - 07 02 -	 01 01 02 02	Based on the result of DUS test, National Variety Release Committee has recommend this number of new varieties out of the figure at the above no. 06. Percentage of rejections shows that the importance of DUS programme.
22. Research publications	03	02	03	Output of research publications should not be considered as major

				performance indicator because the SCS is mainly a regulatory body. However, research activities are not considered seriously due to lack of staff and motivation.
23. Trainings (no. of trainees) - seed farmers - nurserymen - gov. officers - private sector officers - other seed handlers Total foreign trainings (no. of SCS staff)	 270 30 3,885 1,070 2,065 7320 19	 193 176 1,095 224 553 2,241 12	 684 176 1,403 03 379 2,645 08	Training were conducted at the field (24 regions, 4 labs and 6 post control units) and in different crop stages and in laboratory on testing programmes for government officers and seed farmers. But training for private sector is demand driven.
24. Information dissemination - Radio - TV - leaflets/posters/banners - field days - exhibitions	 01 01 ? ? ?	 11 05 ? ? ?	 05 05 ? ? ?	Using quality assured seed and planting materiel is vital for agriculture productivity increase and general public should be aware correctly and therefore, effective and efficient media programmes should be conducted ? Yet to be collected these information.

Annexure 07
Comments on productivity of institution based on outputs and S & T staff strength

The SCS is a national level institution that operates all over the country having 24 regional stations, 5testing laboratories, 1 seed health testing laboratory and 6 post-control testing farms. SCS has been working on 16 areas including implementation of Seed Act No. 22 of 2003, certification of quality of basic seed and commercial grade seeds (of rice, vegetables, OFC and potatoes) and planting materials, registration of fruit mother plants, fruit plant certification and nursery registration, laboratory testing of local and imported seeds, evaluation of the quality of imported and local seeds through post control grow out trials, testing for Distinctness, Uniformity and Stability (DUS) of varieties prior to recommending for release, laboratory testing of local and imported seeds for seed health, conduction training and awareness programmes for stakeholders, conducting seed technology research to overcome field issues of seeds, quality assurance of stored seeds, denomination of imported seeds prior to marketing, data base management and monitoring, publishing directories of nurseries and seed producers and conducting GAP Certification programme.

When considering the outputs identified in the above table, It is clearly shown that SCS has achieved significant progress of outputs during the time period from 2016- 2018, even though without having full strength of S&T staff and with some constraints in fund allocations, transport and other infrastructure facilities. However, there are gaps and lapses that can be identified and should be addressed to meet the country need and especially to face the challenges in agriculture at climate change environment, food security and food safety too. Quality SPM are a prerequisite to agricultural development in a sustainable manner and therefore, all outputs are significantly relevant to the vision and mission of the institution.

Furthermore, it is important to note that SCS generates a significant amount of income through its SPM certification programme that contributes to the government budget allocation Rs 45 million in 2016, Rs 61 million in 2017; and Rs 105 million in 2018.

Annexure 08
Vision

As the vision statement of the SCS has to fall in line with that of the DOA, the mission statement should be formulated based on a bottom-up approach. Contribution of every employee at all levels should be obtained for the formulation of the mission statement. It should be in simple language to be understood by everyone to ensure his/her contribution towards achieving the aims of the mission statement.

A Corporate Plan should be developed with quantifiable targets in relation to the national requirements. Each target should be achieved within a reasonable timeframe. The progress of the activities should be reviewed at least once in two weeks. For this purpose, modern information technology should be used to prevent officers from travelling from distant places around the country to head office to take part in progress review meetings. Proper minutes should be maintained to ensure efficient functioning of the system.

The functions of the staff members are well organized under different specified disciplines though severe dearth of technical staff hampers to same extent implementation, including research and development activities.

Annexure 09

The National Policy Framework Vistas of Prosperity and Splendour

"The National Policy Framework Vistas of Prosperity and Splendour" published by the Ministry of Finance, Sri Lanka has identified 10 key sectorial policies that includes People-Centric Economy covering agriculture as a sub-sector. The subsector on Agriculture in turn has identified three Sectoral Policies and Policy Components Viz: 1. Agriculture development through advanced technological innovations; 2. Building up a healthy and productive nation guaranteeing the people's right for safe food; 3. International export business through various value added products backed up by new technologies;

The above mentioned Sectoral Policies and Policy Frameworks are subdivided into 4 strategies namely: 1. Introduce a "new National Agricultural Policy" after an in-depth review of the present policies; 2. Energize and capacities of universities, research institutes and private sector; 3. Expansion of agriculture production by providing good seed and planting materials and 4. Promote and popularize organic agriculture during next ten years;

Furthermore, the activities identified under agriculture; include 1. Increase Land Productivity, 2. Modernize Agriculture, 3. Promote Youth Entrepreneurship, 4. A Revolution in the use of Fertilizer, 5. Production of Seeds and Planting Materials, 6. Packaging and Storage 7. Marketing and Transport, 8. Research for Agricultural Innovation, 9. Help Paddy Farmers

Importantly the Activities identified under Production of Seeds and Planting Materials has included sub activities covering 1. "Introduce a domestic seeds policy" to produce quality seeds at international standard. 2, A standards certificate will be made compulsory to import seeds 3. Promote private sector to produce quality planting material on a large scale. 4. Establish a seeds bank under the Ministry of Agriculture to ensure seed safety

The comprehensive exercise we have undertaken during the period from May to October 2019, covers all the above 4 activities exclusively, that makes this Review and suggestions proposed more meaningful and valid in the context of present government policy directions on agriculture development.

Annexure 10

Photographs

Meeting with the retired officers of SCS and DOA, at the SCS, Gannoruwa

Meeting with the Provincial Director of Agriculture (Wayamba) and the DPD, at the SCS, Gannoruwa

Meeting with the key members of the seed association, in Colombo


Meeting with the Key officers of the SCS, at the SCS Headquarter, Gannoruwa


Workshop on the Seed Act with leaders of farmer organizations in pressure groups at the SCPPS, Gannoruwa

Visit to farmers field in Nalanda and Dambulla

Dr S Weerasena

Mr WAG Sisira Kumara

Dr L Nugaliyadde

Mr A Jayawardena