EXTERNAL REVIEW OF THE NATIONAL PLANT QUARANTINE STATION (NPQS), KATUNAYAKE

A Report submission to the

Sri Lanka Council for Agricultural Research Policy (SLCARP)

2019

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Acronyms and definitions

AFAS	Australian Fumigation Accreditation Scheme
AFFA	Department of Agriculture, Fisheries and Forestry – Australia
APPPC	Asia and Pacific Plant Protection Commission
ASP	Agreement on Sanitary and Phytosanitary
ASYCUDA	Automated System for Customs Data
CARI	Central Agricultural Research Institute
ePhyto	Electronic Phytosanitary Certificate System
FAO	Food and Agriculture Organization of the United Nations
GAP	Good agriculture practice
IPPC	International Plant Protection Convention
MtBr	Methyl bromide
NPQS	National Plant Quarantine Station
NQRP	Non quarantine regulated pest
PPN	Plant parasitic nematode
PQS	Plant Quarantine Stations
PRA	Pest Risk Analysis
PSC	Phytosanitory certificate
QP	Quarantine pest
RPPO	Regional Plant Protection Organization
SCPS	Seed Certification and Plant Protection Centre
SOP	Standard of procedure
VHT	Vapor Heat treatment
WTO	World Trade Organization

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EXECUTIVE SUMMARY

Quarantine deals with all activities designed to prevent introduction and/or spread of quarantine pests or to ensure their official control. Quarantine pests are pests of economic concern that do not occur in a specified geographic area or that are being officially controlled in that area. Therefore, Quarantine plays an important role to prevent introduction, and spread of pest from other countries and regions.

National plant quarantine station (NPQS) originally focusing on preventing the introduction, establishment or spreading of alien pests into Sri Lanka, which may harm the flora and the environment of the country. This service has the responsibility of enforcing the implementation of Plant Protection Act No.35 of 1999 which was passed by the Parliament in July 1999 and regulations made by the Minister of Agriculture and notified in the Gazette of 12.11.1981 including 19 regulations covering almost all aspects related to importation of plants and plant products to Sri Lanka.

The NPQS is currently functioning attached to the Ministry of Agriculture having its main premises in Katunayake with 7 technical divisions and 2 supportive divisions and 4 substations outside. Recently the structure of the organization has been changed as the Additional Director appointment was created as a Head of the NPQS and additional divisions including bio-security and packing house, auditing divisions were formed to strengthen plant quarantine process.

While implementing national and international plant quarantine rules and regulations, NPQS also functioning on preventing introduction of alien invasive pests into Sri Lanka to protect agricultural industries, bio diversity, vegetation and environment, taking legal actions for control and eradication of introduced insect pests, diseases and noxious plants (weeds), while facilitating exporting local plant products to the international market, developing treatment to eradicate pests of quarantine importance, and preventing high quality/ threatened crop materials from being brought out of the country.

The review has identified that the NPQS continue to function its service at a satisfactory level despite of lack of resources available. However, there remain weaknesses in management of the quarantine functions, which need to be addressed urgently. The review identified importance of quarantine function through: the development of national awareness campaigns; the establishment of a more intensive and open approach to risk analysis; continuous improvement of operational management and planning of quarantine programs; and the strengthening of quarantine border controls specially the extension and improvement of pre-border and post-border operations.

In particular, emphasis has to be placed on updating national pest lists through regular pest surveys and surveillance, identifying pest free areas or places of low pest prevalence for trade

purposes, and early detection of exotic pests, encouraging stakeholder participation for NPQS matters such as the organization of working and discussion groups, provision of technical advice and research such as risk communication, research on identification of changes of pest biology, development of treatment standards and identifying methyl bromide alternatives, and efficient biological control methods.

To support this, strengthening the NPQS with skilled and qualified human resources, providing adequate infrastructure facilities, empowering officers with adequate responsibilities and support at entry points, strengthening research and development, training staff regularly, *etc.* were highlighted in this review and are being reported as high priority.

This unprecedented work represents only the five year period from 2014 to 2018 and reported based on site visits and discussions/meetings held with relevant stakeholders.

1. INTRODUCTION

In Sri Lanka, responsibility for plant quarantine rests largely with the Department of Agriculture and the legal authority for implementation of plant quarantine activities is vested with the Director General of Agriculture. A clear understanding of the plant quarantine regulations will help importers of plants and plant products to obtain their materials without delay and without introducing any dangerous pests into the country.

In order to prevent introduction of alien pests into Sri Lanka, different rules and regulations have been implemented. Sri Lanka has enacted several laws related to plant quarantine such as Insect Pest and Quarantine Ordinance (1901), Plant Pest Ordinance, (1907), Water Hyacinth Ordinance, (1907), Plant Protection Ordinance, (1924) and Plant Protection Act (1999). The Plant Protection Act No. 35 of 1999 was passed by the Parliament in July 1999. Since new regulations are not yet enacted, those made under the old Ordinance are still in operation.
In the Gazette notification of 12.11.1981, nineteen regulations have been introduced covering almost all aspects of plant quarantine are with respect to the import and export of plants and plant products. The Director General of Agriculture is responsible for the administration and implementation of the Plant Protection Act No.35 of 1999 and on his behalf, the NPQS performs plant quarantine activities in the country.

The main activities performed by NPQS include,

- Issue of Plant import permits & Phytosanitary Certificates
- Inspection and testing of export and import consignments
- Application of plant quarantine treatments
- Action on non- compliances & notifications
- Surveillance-Pest status, Pest risk analysis, and Pest reporting

Agricultural agencies in Sri Lanka have been mainly entrusted with a pest prevention mission: to protect agriculture, the environment, and citizens from the damaging effects of plant pests. Satisfying this mission while providing for equitable trade in both domestic and international markets is a major challenge. The ideal pest prevention system is one that is mutually agreed upon and uniformly applied. It must effectively identify the damage potential of a pest and assess and manage pest risk. Mutual agreement among pest prevention agencies cannot be achieved unless each agency understands the functions, activities, and tasks involved in identifying harm caused by pests and uses valid pest risk assessment and management procedures. Uniformity cannot be achieved unless guidelines are established, serving as standards against which pest prevention activities can be measured.

The existing array of state plant pest and disease regulations varies considerably due to rising occasional disputes and of unfair trade practices. Therefore, the government should now fully focus on consistent, effective programs such as,

- More state responsibility in managing plant protection work;

- Greater concern over environmental impacts of pesticide use;
- Importance of pest prevention programs in promoting exports;
- Frequent violations of existing quarantine controls;
- Industry cost control methods, such as just-in-time delivery through efficient proceedures.

Quarantine pests are pests of economic concern that do not occur in a specified geographic area or that are being officially controlled in that area. Determining whether a pest is of quarantine significance, requires "a pest risk analysis" be performed to identify the kind of damage, or harm, the pest could cause and the likelihood that harm could occur. Therefore, the mechanisms should allow pest prevention agencies to identify quarantine pests and select measures to reduce pest risk to acceptable levels. The quality of various commodities can be seriously affected by the presence of pests or by the damage they cause. Therefore, apart from quarantine restrictions, it may regulate commodity quality with respect to "quality pests" (non-quarantine pests) and nursery stock pests.

Also, the country should clearly establish commodity entry standards at the time of import. This concept should be consistent with other countries in the world as they mostly determine entry requirements for plant material and other commodities. Accordingly, Phytosanitary certificates should be issued by duly authorized officials to affirm, declare or verify that a shipment of regulated commodities fully complies with quarantine requirements and these certificates should be appropriate, valid, and reliable.

The NPQS guidelines and controls are yet another step toward the common goal of harmony and uniformity in the field of plant pest regulation. They will enable plant protection agencies in the country to protect agriculture, the environment, and the public against damaging pests while offering industry continued opportunities for equitable trade.

NPQS should now move to the next level while focusing with technology towards Artificial Intelligence and Machine Learning in the areas of Quarantine requirements, driving efficiencies in reducing state cost, and delivering more cash benefits to trade. We are in the midst of the fourth industrial revolution. This pace of transformation is unprecedented, and it is therefore, critical that we navigate this change ably. Therefore, every step and programs of the service should focus on reducing origin/destination inspection workload, reduce delivery delays, and facilitate orderly trade for continuous improvements while maintaining required quality standards.

1.1. HISTORY OF THE PLANT QUARANTINE SERVICE IN SRI LANKA

The first plant quarantine law in the Asian region was established in Indonesia when in 1869, a rust disease *Hemileia vastatrix* wiped out the coffee plantation in Ceylon (now Sri Lanka). During that time, Indonesia passed legislation banning coffee imports including sacs used for packing coffee from Sri Lanka. Later in 1880s, it was recorded that British scientists of the Department of Agriculture at Peradeniya commenced plant quarantine activities as Sri Lanka became a

center for identification of pests affecting crop plants during that period where regional countries have sent diseased plant/pests samples for scientific studies. After the establishment of Central Agricultural Research Institute (CARI) at Gannoruwa, Peradeniya, all the plant quarantine activities were carried out jointly in the divisions of Entomology and Plant pathology of the same Institute. In early 1980s with the help of Australian government, a separate unit for Plant quarantine activities was established in Gannoruwa within the premises of CARI and a chief Plant Quarantine officer was appointed assigning all the responsibilities of plant quarantine in the country.

The present National Plant Quarantine Service complex was established at Katunayake in 1994 with the financial assistance of the Japanese Government. From 1994 to 2000, Dr. S.M.C. Subasinghe was the head of the NPQS and later 2002, Dr. (Mrs.) H M R K Ekanayake was appointed as the Deputy Director (Plant Quarantine) to head the Institute.

1.2 MANDATE

This NPQS service has the responsibility of enforcing and implementation of Plant Protection Act No.35 of 1999 and Regulations made thereunder in relation to plant quarantine activities. It also conducts research and development activities in plant quarantine aspects.

1.3 VISION

Facilitate the international movement of healthy plants and plant products for the development of national agriculture and related industries.

1.4 OBJECTIVES OF NPQS

All activities of NPQS aim to achieve certain objectives which could be identified into four major groups mainly,

a). Prevention of introduction, establishment and spread of dangerous alien pests within the country
b). Involvement in domestic pest control programs
c). Development of treatment technologies to eradicate pests of quarantine importance and
d). Promotion of export of pest-free plants and plant products.

1.5 ORGANOGRAM

The NPQS is currently functioning attached to Department of Agriculture under the Ministry of Agriculture having its main premises in Katunayake with 7 technical divisions and 2 supportive divisions and 5 plant quarantine substations outside (Fig. 1.1). The institute (NPQS) is headed by the Additional Director who report to the Director of the Seed Certification and Plant Protection Centre (SCPS) under the Director General of Agriculture in the Department of Agriculture.

Recently the structure of the organization has been changed as the Additional Director appointment was created as a Head of the NPQS and additional divisions including bio-security and packing house, auditing divisions were formed to strengthen plant quarantine process. Division of biosecurity performs Pest Risk analysis and the Pack house inspection division assist farmers to produce quality fruit and vegetables with good agriculture practice (GAP) for the local and foreign market in collaboration with extension staff.

At present, there are five Plant Quarantine Stations (PQS) attached to the NPQS. They are namely PQSs in airports in BIA and Mattala, PQSs in the seaport, Colombo, and Magampura, and Plant Quarantine Station at Gannoruwa. Seven divisions in the NPQS involved in technical activities related to the plant quarantine along with two supporting divisions for administration and maintenance and Labour management.

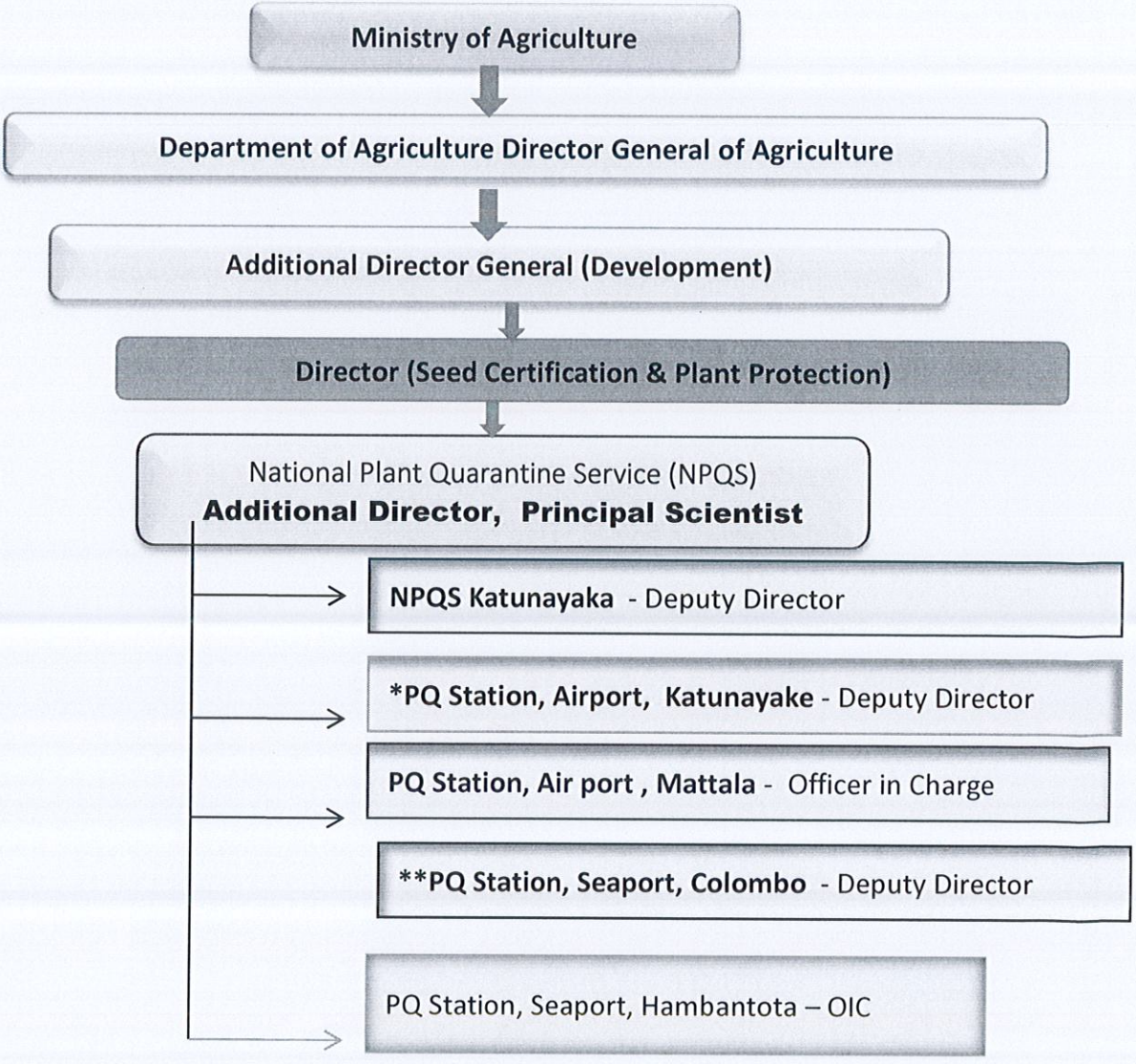

Figure 1.1 Organogram of the NPQS

1.6 INTERNATIONAL COMMITMENTS

There are several international agreements signed by Sri Lanka concerning plant quarantine and those include,

- World Trade Organization (WTO) and the Agreement on Sanitary and Phytosanitary (ASP) matters
- International Plant Protection Convention (IPPC)
- Asia and Pacific Plant Protection Commission (APPPC), a Regional Plant Protection Organization (RPPO) under IPPC.

1.7 QUARANTINE RELATED LAWS

Following quarantine related laws are applicable to NPQS.

- Plant protection act, no. 35 of 1999
- Fauna and flora protection (amendment) act, no. 22 of 2009
- Forest ordinance 1907 (no. 16 of 1907) as amended up to 2009
- Fisheries and aquatic resources (amendment) act, no. 35 of 2013
- Custom ordinance 17 of 1869
- Seed act
- Animal diseases act no 59 of 1992

1.8 PURPOSE OF THE REVIEW AND ITS SCOPE

The purpose of the review is to understand whether the NPQS is future fit for the domestic and international requirements and how it is aligned to support the economy of the country. With this effort, it would be able to project the future of the department up to the next 5 years. Although there are no guarantees about the future volatilities in the domestic and international environments, but this review can be a powerful tool for knowing the trade potential for growth. By doing these reviews, the NPQS can learn more about the best practices in other similar competitor countries and about supply and demand within our country and trade and can find opportunities for growth.

By contemplating the on the established applicable Laws and regulations, an economic and a purposeful analysis provides vital insights that we can apply to the Institute's marketing efforts and plans for trade growth and development.

Finally, an external review evaluated the end to end operation of the NPQS and would propose all future requirements to be a dominant service within the given trade fulfilling the growing industry needs, domestic, and internationally aligning to the other social, political and economic factors.

1.9 REVIEW PROCESS

External review team visited the head office of the NPQS, all operational sites, (Table 1.1) having detail consultation with the officials, observing and analyzing the current procedures,

documentation & practices. SWOT analysis was conducted consulting relevant stakeholders and going through various information and reports.

Table 1.1. Visits and meetings carried out in line with the external review from May to August, 2019

Date	Purpose/Place(s) visited
09.05.2019	Initial discussion and making NPQS staff aware on the review process
13.06.2019	Presentations of each division
14.06.2019	Presentations and division visits
19.07.2019	Divisions, seaport, and airport visits
09.08.2019	Visiting Mattala airport
12.09.2019	Final presentation at NPQS

2.0 DIVISIONAL VISITS AND OBSERVATIONS *(Overview of the Performance during last 5 years, strengths and weaknesses, Contribution to the national development).*

A brief summary of each program is given under this section showing broad indicators of demand for each program's services and the resources allocated by the Department of Agriculture, performance during last five years and potential for further improvement.

2.1 ADMINISTRATION DIVISION

The Division functions as a supportive service across the divisions.

2.1.1 Staff structure of the Administration division

The division consists of the following structure,

- 01 Administrative officer (AO)
- 02 Development Officers (DO)
- 07 Public Management Assistants (MA)
- 02 KKS
- 04 Drivers

Vacancies exist for one Public Management Assistant and for a one Driver.

2.1.2 Main functions

The division ensures maintenance of personal files of the entire NPQS staff, attend to procurement requirements on operational matters, vehicle repairs and maintenance, ensures correct calculation of driver's, over time payments, maintaining loan records, leave records, maintenance of circuit bungalow, and look after the needs of the bungalow keeper.

2.1.3 Observations/ General comments

- Handling financial activities without a proper finance branch has drastically affected efficiency. Due to the distant location from the Head office, there are occasions where the cheques are received late resulting officers must spend their own money for official work.
- Insufficient funds for maintenance of equipment and vehicles (Ex- Air conditioner breakdowns in inspection rooms). The temperature fluctuations could affect NPQS operations significantly specially when complying with international standards.
- No efficient networking system with other divisions.
- Need to establish direct ATM facilities for payments & withdrawals for all official transactions, since there is no finance section available for the division.
- Current travelling claims up to Rs 5000/- be revised to cover inspection based visits as officers cover more visits than this limit.
- Need to introduce reasonable inspection charges from the companies /exporters
- Establish a rewarding system for all level of workers/officers
- Need conducting periodical productivity program across all divisions (Ex - 5s)
- Establish a regular audit inspection system at least for every 02 years.
- Need to purchase quick reference guide or database with pictures.
- Filling of cadre positions across all divisions

2.2 Farm division

2.2.1 Staff structure of the Farm division

The division consists of the following structure,

- 01 Administrative officer
- 05 Permanent labourers
- 14 Contract labourers
- 01 Electrician
- 05 Watchers

2.2.2 Main activities

Undertaking farm related activities, landscaping, cleaning, weed management, *etc.*

2.2.3 Observations / General comments

- Obtaining required number of contract labour is challenging, due to labour shortages.
- Usual of 8 contract labourers are available but, newcomers are not attracted due to low salary.
- Improper use of resources other than farming activities (Ex. One labourer used as telephone operator, few labourers given to laboratories as lab assistants, Two of them were given to Addl. Director and Principle Scientist, some labourers have been allocated for sanitary work). Only four resources are being used in real farming activities.
- Main crops grown in 4 Acre land are Cashew, King coconut, and Mango.
- No cadre positon for FM where an Agriculture Instructor is currently working as the FM
- Maintaining a very good waste disposal system and composting organic wastes and this work should be appreciated and reworded.

2.2.4 Recommendations/Suggestions

- Re-allocating labourers for farming activities
- Efficient utilization of labours on a specific plan
- Creation of FM position or re-naming the farm division

2.3 OPERATION DIVISION

2.3.1 Vision

The vision of the division is to "Coordinate the plant quarantine activities to facilitate the international movement of healthy plant and plant products".

2.3.2 Staff profile

The division consists of two Assistant Directors (Development), two Research Assistants, One Program Assistant, five Agriculture Instructors and seven technical assistants (Table 2.1).

2.3.3. Main activities

The operation division undertakes following activities.

- Coordination of Export plant nursery inspection and preparation of final test reports as supporting documents to issue phytosanitary certificates
- Coordination of activities between the ports of entry and laboratories in testing samples and complication of final test reports required to release imported consignments
- Destruction of prohibited, problematic or pest infected materials submitted to the National Plant Quarantine Service (NPQS) laboratories
- Handling of post Entry quarantine activities
- Organizing training and awareness programmes for stakeholders and general public

- EU exporting fruit &vegetable fields certification and auditing.
- Pack house inspection
- Coordination with stakeholders on plant quarantine matters.

Table 2.1 Staff profile of the Operation Division

Name of the Officer	Designation	Highest Academic Qualification	Specialized area
Mrs. G.G.D. Lalani	Assistant Director of Agriculture (Dev.)	MSc	Agriculture Extension and Communication
Mrs. M.P. M.Senarathne	Assistant Director of Agriculture (Dev.)	MSc	Food and Nutrition
Mrs. L.S. Amarasena	Programme Assistant	BSc Agri (Sp.)	Entomology
Mrs. A.L.A.N. Arosha	Agriculture Instructor	Diploma in Agriculture	
Mrs. M.M. Kumari	Agriculture Instructor	Diploma in Agriculture	
Mrs. H.M.N.N. Herath	Technical Assistant	Diploma in Agriculture	
Ms. D.C.H. Kumarasinghe	Research Assistant	MBA	Agri-Business Management
Mrs. D.M.S.K. Dissanayake	Research Assistant	BSc. Agricultue	Horticulture & Landscape Gardening
Mrs. H.M.I.C. Ruwanthika	Agriculture Instructor	Diploma in Agriculture	
Mr. D.R. Sampath	Agriculture Instructor	Diploma in Agriculture	
Mrs. W.M.U. Jayamali	Agriculture Instructor	Diploma in Agriculture	
Mr. H.K.M.S.K. Ariyapala	Technical Assistant	Diploma in Agriculture	
Mr. M.R.D.S.K. Mannamperuma	Technical Assistant	Diploma in Agriculture	
Mrs. A.U. Vijesekara	Technical Assistant	Diploma in Agriculture	
Mrs. K.A.M.S. Kuruppuarachchi	Technical Assistant	Diploma in Agriculture	
Mr. A.H.L. Aththanayaka	Technical Assistant	Diploma in Agriculture	
Mr. Noyel Yasarathna	Technical Assistant	Diploma in Agriculture	

2.3.4 Progress

The division is mainly performing a coordinating role among various stakeholders for proper execution of the quarantine activities. The progress of various activities carried out at the division from 2014 to 2018 is given in the table 2.2. It was observed that there is a high rate of export and import rejections in past 2 years (2017 and 2018) (Table 2.3). Most of these rejections can be avoided adopting proper agriculture practices and this can be facilitated through educational programs and trainings.

Table 2.2 Progress of the activities undertaken by the operation division from 2014 to 2018 (Exports and Imports)

Activity	Year				
	2014	2015	2016	2017	2018
Registration of interceptions (Import)	386	420	369	399	452
Number of interception reports sent	380	417	366	398	452
Number of rejected interception reports	-	-	-	06	08
Registration of inspections (Foliage & Food)	1309	1452	1521	1481	1516
Number of inspection reports sent to entry points	1248	1344	1447	1380	1461
Registration of coir products for testing	455	485	463	476	539
Reports for tested coir products	395	462	412	407	473
Registration of imported seed potatoes for testing	26	37	29	26	30
Reports for tested seed potatoes	26	38	31	26	30
No. of rejected seed potato consignments	02	03	05	04	03
Registration of submitted samples for testing	36	58	40	55	74
Issue of phytosanitary certificates	11	05	-	-	-
Registration of Korean net houses				02	01

Table 2.3. Export Import Rejections with Reasons

Year	Commodity	No. of Rejections	Reasons for Rejections
2017	Interception (Quinoa Seeds, Black Pepper, Leeks Seeds, Fresh Ginger)	06	Quarantine Weed Seeds and Quarantine Plant Pathogens
	Interception (Seed Potato)	04	Quarantine Plant Pathogens
	Exports (Coir)	36	Weed Seeds and Soil
2018	Interception (Leeks Seeds, Beat Root Seeds, Cauliflower Seeds, Grass Seeds, Onion Seeds, Nigella Seeds, Coconut Kernels)	08	Quarantine Weed Seeds and Pathogens
	Interception (Seed Potato)	03	Quarantine Plant Pathogens
	(Exports) Coir	36	Weed Seeds and Soil
	(Exports) Foliage	02	Mealy Bugs

Number of trainings conducted by the division (Table 2.4) is not sufficient understanding the nature and importance of activities. Further, efforts should be made to train main stakeholders (importers and exporters) of the NPQS. This need to be expanded and taken high priority in the future.

One of the other activity of the division is the field certification and auditing. There is a big improvement in these activities in 2017 and 2018 (Table 4.5). Fields registration initiated in 2015 can be considered a good attempt. Extension Service / support field inspections needed to involve certification up to harvesting stage (Ex. Developing appropriate packages).

Among registered fields for EU exports, the division was able to certify good number of fields while banning several registered fields (Table 2.5).

Table 2.4 Trainings conducted by the operation division from 2014 to 2018

Activity	Progress (year)				
	2014	2015	2016	2017	2018
Number of one day training programs	14	14	15	14	16
Number of supervision of undergraduates training programs	04	05	08	05	10
Number of supervision of diploma students training programs	02	03	05	03	05

Table 2.5 Number of registered fields and certified fields with auditing from 2014 to 2018

Activity	Year				
	2014	2015	2016	2017	2018
Number of Registered fields for EU exports	-	-	230	414	388
Number of certified fields for EU exports	-	31	40	301	294
Number of audits for certified fields	-	-	-	158	150
Number of banned certified fields	-	-	-	07	14

The progress of the pack house inspection during 2014 to 2018 is presented in the table 2.6

The pack house inspections have been carried out since 2016 and in 2018, there is a big improvement in this activity.

Notifications are provided by the importing country to the exporting country to identify significant failures of consignments to comply with specified phytosanitary import requirements or to report emergency action that is taken on the detection of a pest posing a potential threat is called noncompliance.

Table 2.6. Progress of the pack house inspections during 2014 to 2018

Activity	Year				
	2014	2015	2016	2017	2018
Number of pack house inspections for EU export certified fields	-	-	44	160 (from June – Dec)	980
Number of inspected consignments for EU export certified fields	-	-	-	-	2065 Consignments
Total weight of rejected fruit and vegetable	-	-	-	-	1050 kg

The reasons for noncompliance in general include;

a. Failure to comply with phytosanitary import requirements
b. Detection of regulated pests
c. Failure to comply with documentary requirements, including:
    - Absence of phytosanitary certificates
    - Uncertified alterations or erasures to phytosanitary certificates
    - Serious deficiencies in information on phytosanitary certificates
    - Fraudulent phytosanitary certificates
d. Prohibited consignments
e. Prohibited articles in consignments (e.g. soil)
f. Evidence of failure of specified treatments
g. Repeated instances of prohibited articles in small, non-commercial quantities carried by passengers or sent by mail.

It was observed that non-compliance rate is high at NPQS compared to other countries and at increasing rate. The review team observed that there is no dedicated person to handle non compliances.

The noncompliance received with PSC during the period is very high (Table 2.7). The major reasons for noncompliance in 2019 was due to commodities exported without PSC and presence of harmful organisms (Data not shown). Prohibited Plants, Plants Products or Other Objects also contributed significantly to increase non compliances in 2019.

This factors contributing high non-compliance rate during this period could be lack of space and facilities at the airport, fewer sampling, field level problems, very short time period available for sample inspection and approval, and insufficient staff availability (Ex. It needs at least 10 officers needed at the pack house). There is a risk of mixing commodities with non-sampled populations and need to addressed. Therefore, exporters awareness programs are required. For this, NPQS web site need to be improved providing all the supporting documents in the web site.

Therefore, corrective measures such as Informing to relevant partners. (Exporters, Pack House Owners, Growers, Extension Officers and NPQS Officers), introducing recommended practices and process to apply value chain development for Agricultural Products, conducting training programs for stakeholders and relevant departments (*i.e.* Postal Department/ Custom Department), temporary banning EU exports, supervising and auditing the fields and pack-houses, and informing the customs Department regarding noncompliance without phytosanitary certificate, need to be taken.

Table 2.7 Noncompliance received with and without PSC during 2016 to 2018

Year	No. of NC Received With PSC	No. of NC Received Without PSC	Total
2016	39	05	44
2017	48	07	55
2018	29	17	46
2019 up to May	29	11	40

Implementation of electronic Phytosanitary Certificate (ePhyto) is currently under way but slow. This need to speed up to support the efficient and effective PSC issuing.

ePhyto is the electronic version of a phytosanitary certificate. Sri Lanka has been selected as a pilot country by a global country survey by the IPPC to implement this activity. DAWR of Australia coordinate this pilot activity in Sri Lanka.

ePhyto is Important to NPQS activities because it speed up Information exchange, reduced cost, minimizes opportunities for fraudulent documentation, reduces delays in receiving replacement PSC, improves the security of PSC transmission and creates opportunity to align with 'Single Window' initiatives.

Present situation of the ePhyto project

UNICC has developed a software to generate ePhyto and currently modifying the software according to the feedback of pilot countries. In addition, capacity building programme for NPPO officers and Industry awareness sessions are expected to be conducted. The benefit analysis will be done by the post graduate institute Agriculture, Peradeniya.

No network among divisions is a serious problem and reduce efficiency due to highly dependent on paper based works. To issue a Phytosanitory certificate, it usually takes 4-5 days at Plant pathology division and minimum 21 days at weed science division for coir products. If no

additional declarations required, PSC can be issued within 10-15 minutes. Networking all the divisions would help to quick processing of applications therefor, it was observed that there is a urgent need to speed up the implementation of an appropriate database management system covering all areas.

2.3.5 Observations/General comments

PSC is issued at the rate of Rs. 162.00 per certificate. This need to be increased as effort made and time spend on this activity are enormous. It was noted that the income generated through those services is not diverted to the NPQS. Therefore, it should introduce some financial contribution through income generated from offering those services (something similar to cess tax at TRI), and that money should be able to utilize for various activities (ex. staff training, improving laboratory facilities, *etc.)*.

When officers sent out side for inspections, the travelling can claim only up to Rs 5000/= per month. However, it was noted that officers pay more visits as a result of lack of staff but cannot claim for all the visits due to this limitation. It requires corrective measures to get their service effectively.

It was also noted that a service of System analyst is required for documentation and record keeping.
Post quarantine inspections are also carried out through this division. This is a huge task and assistance of the research stations of Department of Agriculture should be taken maximum.
The trainings or educational programs for exporters and importers is not sufficient. This need to be strengthened.

Technical Assistants haven't received required training to perform their duties effectively. The trainings received buy the staff up to 2018 are given in the table 2.8. It clearly shows only few members have received foreign trainings and all the others have received local trainings (mostly one day). Therefore, training its staff for improving their skills is very much important.

Table 2.8 Local and foreign trainings received by the staff of Operation Division up to 2018

Name of the Officer	Local Training with duration	Year of training	Foreign training with duration	Year of training
Mrs .G.G.D. Lalani	Hybrid rice training (3 months)	2001	Sufficiency economy for Agriculture (Thailand) (3weeks)	2012
	Radio programme production (2 weeks)	2007	Health Quarantine techniques. (China) (3 weeks)	2016

	Radio programme editing (10 days)	2015		
Mrs. M.P.M. Senarathne	Web site development training	2018	ISPM 31 sampling workshop (1 week) Indonesia	2016
Mrs. L.S. Amarasena	Pest Risk Analysis (10 days)	2013	-	-
	Sanitary and phytosanitary Measures 2013 (10 days)	2012		
Mrs. A.L.A.N. Arosha			Seminar for joint prevention and Control on Major Epidemic and Port Health Quarantine officials from Developing Countries (21 days)	2018
Mrs. M.M. Kumari			Seminar on Food Safety Inspection Technology foe countries along the Belt and Road (56 days)	2017

Table 2.8. Local and foreign trainings received by the staff of Operation Division up to 2018. Contd...

Name of the Officer	Local Training with duration	Year of training	Foreign training with duration	Year of training
Mrs. D.C.H. Kumarasinghe	FR 104 (02 days) DNA bar Cording (10days) IPM Training (05 days)	2017 2019 2019	-	-

Mrs. D.M.S.K. Dissanayaka Mrs. H.M.I.C.Ruwanthika	Irradiation training (01) Day IPM Training (05 days) Climatology training (02 days) Authorized training (01 day) Irradiations training (01 day) DNA bar Cording (10days) IPM Training (04 days)	2019 2016 2017 2019 2019 2019	-	-
Mr. D.R.Sampath	Irradiations training (01 day) IPM Training (04 days)	2019	-	-
Mrs. H.M.N.N. Herath	Irradiations training (01 day)	2019	-	-
Mrs. W.M.U. Jayamali	Irradiations training (01 day)	2019	-	-
Mr. H.K.M.S.K. Ariyapala	Irradiations training (01 day)	2019	-	-
Mr. M.R.D.S.K. Mannamperuma	Irradiations training (01 day)	2019	-	-
Mrs. A.U. Vijesekara			-	-
Mrs. K.A.M.S. Kuruppuarachchi	Irradiations training (01 day)	2019	-	-
Mr. A.H.L. Aththanayaka	Irradiations training (01 day)	2019	-	-
Mr. Noyel Yasarathna	Irradiations training (01 day)	2019	-	-

2.3.6 Suggestions

- It was proposed to introduce bank payment method specially at entry points in order to support customers for easy payments
- Introducing inspection charges from the company/exporter as this activity is carried out as a service however, lot of effort has to be made.

- Assigning a dedicated person for noncompliance and taking measures for lowering non-compliance rate
- More funds to be diverted for research/training/awareness activities
- Organizing awareness programs for all stakeholders

2.4 IMPORT PERMIT DIVISION

2.4.1 Vision and Mission

2.4.2 Vision

Facilitate the International movement of healthy plants and plant products for the development of national agriculture and related industries

2.4.3 Mission

Controlling of Internationally movement of plant pathogens by issuing Import permits

2.4.4 Staff profile

The division runs with six staff members including Assistant Director, Program Assistant, Agriculture Instructor and two Technical Assistants.

2.4.5 Progress

The progress of issuing of import permits for submitted permitable applications with relevant approvals and Inspection of required post quarantine facilities per year from 2014 to 2018 are given in the table 2.9.

Table 2.9 Progress of import permits issued and inspection of post quarantine facilities of importing industries from 2014 to 2018

Activity	2014	2015	2016	2017	2018
Import permits issued	4080	3220	3901	4485	4018
Inspection of required post quarantine facilities of importing industries	-	-	-	-	05

2.4.6 Main functions

The key objectives of the division includes issuing import permits to prevent introduction of dangerous alien diseases and weeds into the country and providing required post-quarantine

facilities as necessary in order to facilitate importing industries. The division is involved with following functions.

- Collection and maintaining of data on imports through import permit applications
- Evaluation of applications and identifying permitable and non-permitable applications according to the item and country
- Requesting of no objections for certain items from related institutions
- Preparation of import permits for the items which have already been permitted
- Preparation of import permit conditions for the new items
- Conducting relevant inspections in order to facilitate post-quarantine activities

2.4.7 Observation/General comments

- Automated database is yet to be employed in the preparation of import permits. The division heavily rely on google and CABI databases for issuing import permits.
- Import permit conditions are updated, however, the process and the frequency of update is not up to the expectations
- Certain trainings received by the staff are found to be not relevant thus, would have little or no impact on the performance of the staff.
- Work performance of the staff is hampered by limited space, lack of computers and furniture, *etc.*

2.4.8 Recommendations and suggestions

- Establishment of a committee comprising subject experts, researchers and academia for preparing and updating permit conditions
- Revising fees structure for issuing import permits
- Connecting to Single window for automation and online application
- Preparation of automated database for issuing import permits in place of manual system
- Ensuring uninterrupted internet facilities
- Introducing effective management information system and networking
- Improvement of infrastructure to ensure better working environment

2.5 PLANT PATHOLOGY DIVISION

2.5.1 Vision

Facilitate the international movement of plant pathogen free healthy plants and plant products for the development of national agriculture and related industries.

2.5.2 Staff profile

The division consists of 3 ADAs (Research), 4 RAs, 5 AIs, and one labourer (Table 2.10).

Table 2.10. Staff profile of Plant Pathology division

Name	Designation	Highest Education Qualification	Speciality
1.Ms. M.H.A.D. Subhashini (Head)	ADA (R)	BSc (Agri) special	Plant pathology
2. Ms. H. M.I.S. Chithrapala	ADA (R)	MSc	Crop science
3. Mr. L.C. Wijethilaka	ADA (R)	MPhill	Plant pathology
4. Mr. L.D.K. Arachchige	AI	BSc (Horticulture)	Horticulture
5. Ms. L.C.K. Senarathna	AI	Dip. In Agriculture	
6. Ms. T.D.S.I. Thenuwara	RA	BSc (Plantation)	Plantation management
7. Ms. K.S.I. Senevirathne	RA	MSc (Plant Molecular Biology)	Molecular Biology
8. Ms. A.A.S. Yasodara	AI	BSc (Horticulture)	Horticulture
9. Mr. C. Leelarathna	RA	Dip. In Agriculture	
10.Mr. A.A.P Adhikari	AI	Dip. In Agriculture	
11. Mr. P.A.P. Sisilakantha	AI	Dip. In Agriculture	
12. Ms. D.D.E. Piyathissa	RA	BSc (Agriculture)	Agriculture
13. Mr. Wasantha Priyadarshana	Labourer		

2.5.3 Main functions

The division aims at facilitating the international movement of plant pathogen free healthy plants and plant products for the development of national agriculture and related industries.

It also focusses on preventing introduction, establishment and spread of dangerous alien pathogen within the country, involve in domestic pathogen control programmes, developing treatment technologies to eradicate pathogens of quarantine importance, and promoting export of healthy plants and plant products.

In line with those objectives, the division undertake following activities.

- Identification of diseases and pathogens
- Inspection of import/export cargo of plant & plant products, production sites for pathogens
- Auditing export fruit and vegetable fields
- Post entry quarantine field inspections
- Certification of tissue culture laboratories
- Advisory services for plant nursery men/coir exporters
- Conducting training and awareness programs
- Research activities related to plant quarantine pathogens

In order to perform these activities, the division is equipped with laboratory facilities for virology, mycology, bacteriology, including well equipped PCR laboratory, availability of chemicals and qualified staff.

The division undertake quick detection of pathogens, precise identification using new technologies, and providing quality service.

2.5.4 Progress

The main activities performed under export and import consignments during 2014 to 2018 are presented in table 11. There is a increase in analysis of samples brought into laboratories, visual inspection of tissue culture plants, and samples received from entry points for inspections during this period.

Table 2.11. Main activities performed at the division of Plant Pathology during 2014 to 2018

Activity	2014	2015	2016	2017	2018
Export nursery inspections of export consignment	338	415	380	425	366
Factory inspection of export consignment (Coir/Veg.)	135	63	72	63	55
Analysis of samples brought to lab (Export foliage, Coir)	11,102	12,289	16,500	12,423	13,577
Other agriculture related export inspections (Tissue culture)	89	100	70	85	115
Visual inspection of tissue culture plants	3,394,640	391,714	3,572,668	3,366,096	4,049,662

Entry point inspection of seed potatoes	24	36	30	26	31
Samples submitted by entry ports to NPQS (Plants & Plant Products)	45	32	69	80	297
Samples submitted by entry ports to NPQS (seeds, dried materials, *etc.*)	455	850	711	606	530

There is a increase in rejection of seed potatoes in 2018/19 period and need to attend carefully (Table 2.12). The reasons for these rejections were the detection of quarantine pests in the lot and exceeding the permissible level of non-quarantine regulated pests (NQRP) (Table 2.12).

Table 2.12. Rejection of seed potato imports during 2014 to 2018

Season	No of lots Rejected	Total Lots Inspected	Rejected % & amount (Mt)		Reason for Rejection	Detected Pathogens
2014-15	1	97	1%	25.6	Exceeded permissible level	Black scurf (*Rhizoctonia solani*) NQRP
	2					Netted scab (*Streptomyces* spp)NQRP
2015-16	3	130	2%	53.5	Exceeded permissible level	Comman scab (*Streptomyces* spp) NQRP
2016-17	2	72	1%	13.8	Exceeded permissible level	*Geotrichum candidum* NQRP
	1					Netted scab (*Streptomyces* spp) NQRP
	2				Detection of quarantine pathogen	PVS QP
						Powdery Scab (*Spongespora subterrania*) QP
2017-18	2	106	2%	38.6	Exceeded permissible level	*Geotrichum candidum* NQRP
	2				Detection of quarantine pathogen	Powdery Scab (*Spongespora subterrania*) QP
2018-19	1	61	6%	75.2	Exceeded permissible level	Comman scab (*Streptomyces* spp) NQRP
	1					Netted scab (*Streptomyces* spp) -NQRP

	1				Detection of quarantine pathogen	Powdery Scab (*Spongespora subterrania*) QP

The division currently carry out some research activities however, most of them are related to postgraduate studies of the staff. There are several publications originated as research outputs during this period.

The ongoing research programs include,

- Characterization of causal agent of soft rot in *Aglaonema* spp and exploring the expression of defense-related genes in response to biological control measures
- Improvement of detection methodology of *Pantoea stewartii* in imported Maize
- Investigation of the presence of citrus *greening* (*Candidatus liberibacter*) associated with *Murraya koenigii*

One of the activities of the division is to conduct training programs for stakeholders and the table 2.13. shows number of training programs undertaken by the division during the review period. It is observed that all the trainings were extended to students. It is very important training importers and exporters on various plant pathogens and their quarantine importance therefore, need to be highlighted in future activities.

Table 2.13. Number of training programs carried out by the Plant Pathology division and its contribution as resource persons during 2014-2018

Year	No of students trained	Contribution as Resource persons
2014	12	09
2015	35	12
2016	32	13
2017	39	12
2018	23	11

2.5.5 Observations/General comments

Currently, it takes 5 working days for the detection of plant pathogens with the available methods and this is a laborious process. There are number of novel fast and accurate techniques available such as diagnostic kits for quick detection of pathogens.

It was observed that there is no special allocation for purchasing chemicals. The available chemicals have been purchased through number of projects received by the division.

There is no permanent technician available for the Institute. This is a serious problem because there are large number of expensive equipment available in laboratories and they require regular maintenance and repairs.

There is no backup generator available for the Institute and number of valuable equipment and chemicals are under threat of destroying due to frequent power failures.

Fire extinguishers are said to be not working. No safety measures (ex. Showers) in the laboratory.

The policy on biocontrol agents and GMOs and their quarantine importance are not adequately described. The NPQS require clear instructions on these commodities specially when import to the country.

None compliance system is not operating properly and no proper mechanism adopted to handle this issue. It is needed to assign dedicated person for this task and currently due to lack of staff, no dedicated person has been assigned for handling non compliances.

The division also experience in frequent transfers of officers, lack of trainings for officers (on equipment usage and maintenance, identification methods, and recommended control measures), lack of refresher trainings, health and safety issues due to chemical handling, and less time available for research.

There is no appropriate methods adopted on disposing chemicals and materials after laboratory usage. Currently they practice burning samples after autoclaving as a measure however, not appropriate for molecular based chemicals and materials.

2.5.6 Recommendations and Suggestions

- The division should use novel and fast diagnostic kits for quick detection of pathogens
- The staff must be provided more trainings on pathogen identification
- Need a permanent technician
- Install a backup generator for refrigerators and other high tech equipment
- Proper disposal system specially for chemical waste handling
- Development of SOPs and quick retrievable data base
- Conducting more research and establishing a research fund

2.6 ENTOMOLOGY DIVISION

2.6.1. Vision

Facilitate the international movement of Insect Pests, mites and Parasitic Nematode free plant products for the development of national agriculture and related industries

2.6.2 Staff profile

The division function with 2 Research Assistants, 4 Agriculture Instructors, 1 Technical Assistant, and 1 research sub assistant (Table 2.14).

2.6.3 Main functions

The main functions of the division can be categorized as follows.

- Testing, detecting and identification of insect pests, mites and PPN of export and imported plant materials
- Inspection of export production sites for insect pests, mites and PPN
- Post quarantine inspection
- Auditing of export Fruit and vegetable farmer fields
- Soil survey for PPN in export foliage nurseries
- Maintenance of insect Reference collection
- Mass culturing of Fruit flies for research
- Conducting training and awareness programs
- Plant Quarantine research

The division has resources such as Entomology and Nematology laboratories with equipment to facilitate detection of Insect pests, mites, and parasitic nematodes, 2 mass culturing rooms to facilitate the rearing of insects for research purposes, Insectarium with insect reference collection, and common preparation room for research work and extra sample testing to carry out above functions.

2.6.4 Goals and objectives of the division

- To test insect pests, mites and parasitic nematodes of export plant and plant products for phytosanitory certification.
- To test imported plant and plant products for insect pests, mites and parasitic nematode to prevent introduction of alien quarantine pests into the country.
- To promote production of pest free export plant and plant products.
- To conduct research related to the plant quarantine including the development of phytosanitory treatment standards for quarantine importance insect pests.

Table 2.14. Staff profile of Entomology division

Name	Designation	Highest Educational Qualification
Mrs. B.A.S. Padmasili	Research Assistant	Diploma in Agriculture
Mrs. T.C. Jayathilaka	Research Assistant	Diploma in Agriculture
Mr. Aruna Ranasinghe	Agriculture Instructor	BSc. Agriculture Plantation Management
Mr. K. P. P. Gunapala	Agriculture Instructor	Diploma in Agriculture
Mr. H. A. K.C. Bandusiri	Agriculture Instructor	Diploma in Agriculture
Mr. H. A. K.C. Bandusiri	Agriculture Instructor	Diploma in Agriculture
Mrs. H.N.K. Gunathilaka	Technical Assistant	Diploma in Agriculture
Mrs. H.A. A. Sithkelum	Research Sub Assistant	Diploma in Agriculture

2.6.5 Progress

The progress of laboratory tastings conducted by the division during last 5 is summarized in the table 2.15.

Table 2.15. Progress of laboratory tastings conducted in the division of Entomology from 2014 to 2018

Activity	2014	2015	2016	2017	2018
Export foliage plant samples					
Laboratory testing nematodes	13738	12943	13692	13396	12610
Contaminations recorded	122	142	118	68	37
Laboratory testing insect pest, snails and mites	17962	17179	18602	17356	16551
Contaminations	34	19	16	46	36
Export Coir Samples					
Laboratory testing insect pest, mites	277	428	414	302	282
Contaminations	0	0	0	1	0
Special Samples					
Laboratory testing insect pest, and plant parasitic nematodes	22	67	16	34	54

Seed potato Samples testing for insect pest and plant parasitic nematodes	84	90	95	81	86
Contaminations	0	0	0	0	0
Imported Plant Materials Testing for insect pests and plant parasitic Nematodes	778	612	708	708	728
Contaminations	25	38	12	15	5
Total testings	32860	31319	33781	31877	30311

2.6.6 Ongoing research

- Implementation of the IPPC Project GCP/INT/291/CPR on Capacity Development in Sri Lanka under the Framework of the FAO-China South-South Cooperation Programme.
- Development of Gamma Radiation and Vapor Heat treatment (VHT) stranded to eradicate fruit fly and melon fly infested export potential fruits and vegetables of Sri Lanka.

There were few research publications reported based on the research activities in the division.

2.6.7 Observations/General comments

It was observed that the division suffers seriously with lack of staff. The Principle Scientist (PI) being an Entomologist is covering both duties of Head of the Entomology division and PI's duties this affects the efficiency of both works. Two cadre positions on ADA (Research) were not filled. In addition, new staff recruited due to transfers and found they lack experience and skills therefore, need trainings for them. Internal transfers were done not based on expertise area therefore, the new staff does not possess required skills for conducting important divisional activities. Though there were some training opportunities for the staff, none of the AIs or TAs received training related to Insect identification and detection, and maintenance of laboratory Equipment.

Nearly 4000-5000 samples are being inspected per months by this division where most of the inspections are done for foliage and coir while most of the samples have been referred from seaport. In general, most of the inspections are carried out for additional declarations to issue PSCs.

It was noticed that data were not entered to proper database and mostly depend on paper based system. For record keeping, excel database is being used. This is not an appropriate method and require a better database management system. Lack of computer networking for efficient communication is a serious setback and this reduces efficiency in all activities.

The division suffer from required laboratory equipment, specifically lack of advanced microscopes including good stereoscope microscope is a must to have in the division. The

stereoscope microscope available is old and used for nematode detection only. Nematodes are detected only as plant parasitic and no further examinations are done to know upto the species level identification.

New knowledge and information on quarantine pests of other countries is a must when issuing import permits. The review team didn't observe proper identification guidelines available to follow when identifying insect pests. It is very important to subscribe to updated databases/software/web sites, *etc.* and shared this information with Entomology and other divisions for pests, diseases and weed identification.

It was observed that the repairing of equipment is delayed and should be given high priority. Service of trained technician is utmost important because, laboratories and equipment require up to date maintenance and repairs.

The permit conditions set seems to be outdated and there is a need to revisit permit conditions specially when new plant species are brought to the country.

Declaring pest free areas and also declaring the Island is free from certain pests are important when dealing with international trade. Therefore, it is essential to have island wise surveillance system to declare country is free of pests (Ex. Cuppra Beetle is still not detected in Sri Lanka, however, to confirm this, it needs proper surveillance and confirmations).

The sample testing is done free of charge in all divisions and some special sample tests are also being carried out free of charge. However, these tests are expensive and require additional time and money. Therefore, appropriate fee structure has to be introduced for sample inspections, and additional specific tests and declarations.

The review team observed that limited funds available for research and less time spend on research activities. New research programs have to be identified and included in the action plan.

2.6.8 Recommendations/Suggestions

- Need to directly link with other divisions with proper management information system to avoid current paper based activities.
- Special sample tests are being carried out free of charge and need to introduce fee structure.
- Development of molecular based identification techniques for insect pests and plant parasitic nematodes for efficient, past, and accurate detection of pathogens.
- Need to subscribe to updated databases/software/web sites, *etc.*
- Service of trained full time technician is a must because laboratories and equipment require up to date maintenance. Further, it was suggested to provide more funds for equipment repair.

- Recently, new staff has been recruited however, they lack essential skills. Therefore, urgent attention is required for training the staff.
- Carry out island wise pest surveillance.
- Development of standard operating procedures (SOP's)

2.7 WEED SCIENCE DIVISION

2.7.1 Vision

Facilitate the international movement of healthy products (weed free) for the development of national agricultural related industries

2.7.2 Staff profile

2.17. Staff profile of the weed science division

The division carry out its activities with the help of 5 staff and the staff profile is given in the table 2.16.

Table 2.16 Staff profile of weed science division

Name	Position	Degree	Spatiality
Ms. Renuka Gunasinghe	ADA	BSc (Agriculture)	
Dr. D.P.P. Jayakody	ADA	PhD.	Soil Biology
Ms. Iresha Harischandra	RA	Diploma in Agriculture	_
Ms. Achini Kaluarachchi	AI	Diploma in Agriculture	_
Ms. Indunil De Silva	TA	Diploma in Agriculture	_

2.7.3 Main functions

The division carry out following main functions in order to ensure that the import consignment are free from quarantine important weed seeds and to ensure that export ready consignment are free from viable seeds and soils.

1. Laboratory testing for weeds in exported and imported commodities
2. Performing weed risk analysis
3. Undertaking post entry quarantine activities related to weeds
4. Conducting training and awareness programs
5. Survey and surveillance of weeds in environment and consignments
6. Maintaining reference collection (Herbarium, seeds and aquatic plants)

7. Research on detection/identification of weeds, risk prediction, weed biology/ecology, *etc.*

To support above activities, the division is equipped with a stereo microscope, electric oven, electric balance, a colour sorter machine, and a dryer.

2.7.4 Progress

The division inspect Coir (bales, bricks, slabs, baggers, disks, pellets, blankets, coir poles, fibre pots, fibre bales, *etc.*), vanilla, spices (Cinnamon, Cloves, Cardamom) and plants when export those commodities. The progress of exported coir products contaminated with soil and weed seeds are presented in the table 2.17.

Table 2.17. Export coir products contaminated with soil and seeds from 2014 to 2018

Year	No. of consignments tested	No. of consignments Contaminated with weeds	%	No. of consignments Contaminated with soil	%
2014	455	22	4.80	53	11.60
2015	477	25	5.20	38	8.00
2016	460	41	8.90	47	10.20
2017	370	26	7.00	40	10.80
2018	278	23	8.30	21	7.50

It was observed that percentage of soil contamination in coir products has been reduced in 2018 while seed contamination remains more or less same during the period. Therefore, more awareness programs need to be conducted and good manufacture practices (GMP) need to be adopted to minimize this.

The division is responsible for import of weed free consignments to the country. Currently, imported commodities include grass seeds, vegetable seeds (okra ,pumpkin ,carrot ,beat, beans, onions, leaks, lettuces, cabbage, cauliflower, brinjal, tomatoes, radish, mustered), black pepper, cumin seeds, coriander seeds, peppermint dill seeds, cardamom, herbal tea, silage, mushrooms, grapes seeds, millet grains, sweet berries, cherry, soya beans, wheat, tampico fibre, and peat moss.

The table 2.18. shows number of consignments inspected and number of weed seed contaminated consignments during 2014 to 2018. Generally, Cabbage, Beat and Pulses showed low percentages of contaminations initially however, Onion and carrot consignments showed increased trend of contaminations in the later years according to the table.

Table 2.18. Number of consignments inspected and contaminated when importing various commodities during 2014 to 2018

Commodity	Consignment	Year				
		2014	2015	2016	2017	2018
Onion	Inspected	16	9	21	5	3
	Infected	12	3	9	0	2
Carrot	Inspected	2	3	4	4	10
	Infected	1	3	1	2	6
Beat	Inspected	1	1	1	1	10
	Infected	1	0	0	0	2
Cabbage	Inspected	1	2	1	10	11
	Infected	1	2	0	3	1
Pulses	Inspected	17	1	20	0	6
	Infected	0	1	7	0	0

The division engaged in few research programs on developing seed identification key for *Amaranthaceae* and *Asteraceae* families. Research findings such as potential of DNA bar-coding for weed seeds identification, potential of *Echinodorus* spp to become an invasive species, application of hot air at 100 – 110 ^{0}C for 4 hours and vapour heat treatments to devitalize weed seed species, construction of identification seed keys for families *Nyctaginaceae*, *Polygonaceae* (2013), and *Amaranthaceae* (2019), and potential of retting of coconut husk (4 weeks) to reduce weed seed germination, are some of the key highlights of the division during the period.

2.7.5 Observations/General comments

The division is running with staff recruited on contract basis from those who have been retired from the Agriculture service. Although, those officers have vast experience and knowledge of the subject, it is required to recruit permanent staff and train them thinking of future development of the Institution.

This is the longest time taken to issue PSC in any division as grow out test for weed seeds takes minimum 21 days. New and rapid methods to detect commodities contaminated with weeds need to be developed.
Out of total, only 10% of imports come for inspection for weeds. However, it was observed that number of random samples taken for inspection is not sufficient when compared to the size of the consignment (Requirement = 1 sample/1000 kg; the size of consignment is 30000 kg).

In a market survey conducted by the division recently, it was realized that number of commodities have been contaminated with live weed seeds. Despite of this, importers are continuously asking tolerance levels for weed seeds. It is required to establish conditions for imports (Ex. Ask for total weed free certification for imports). However, this may lead to

uncomfortable situation for the importers therefore, appropriate mechanism has to be developed.

It is known that large number of weed seeds are coming to the country with food items and there is a risk of entering quarantine weeds when discarded food materials are thrown contaminated with weed seeds. This problem is needed to be addressed urgently and take immediate measures to avoid this.

2.7.6 Recommendations/Suggestions

- Recruitment of permanent staff to fill vacancies
- Need to establish conditions for imports (Ex. Ask for total weed free certification)
- Reduced time frame for testing soil & weed through research (Accommodate more staff for research, providing appropriate trainings, introducing novel and rapid technologies and testing procedures, *etc.*)
- Improving detection capacity for quarantine weeds with international collaborations (Capacity building & providing financial Assistance)
- Infrastructure development for testing in accordance with the world trend (new technologies for weed seed viability, new sampling equipment, *etc.*)
- Accreditation of the laboratory
- Providing adequate training and awareness for entry point officers on identification of species which are prohibited, sampling procedures, laws & regulations regarding the illegal importations, *etc.*
- Conducting more awareness programs for policy makers, technical institutions, school children, general public/armed forces and specially for the main stakeholders (Importers and exporters)
- Carrying out Weed Risk Analysis (Conducting frequent surveys, publish information on new weed incidences, developing inventories of plant species with weedy potentials, *etc.*)

2.8 DIVISION OF BIO-SECURITY & INTERNATIONAL RELATIONS

2.8.1 Vision

Preventing the entry of exotic pests and diseases that may cause harm to plant health or the environment through identify, assess and Impose regulations.

2.8.2 Staff profile

The division of Bio-security & International Relations is relatively a new one established in 2016. Currently, this division function with 3 staff members (Table 2.19).

Table 2.19. Staff profile of biosecurity division

Name	Designation	Education Qualifications
N.H.M.S. Chitrapala	Assistant Director (Research)	MSc in Crop Science
I.S.A. Koralage	Research Assistant	BIS Agriculture
N.O. Rajapaksha	Agriculture Instructor	Diploma in Agriculture

2.8.3 Main functions

- PRA (Pest Risk Analysis) is performed for new commodities/products and for the same commodity but from a different country
- Pre-import risk analysis, development of import phytosanitary conditions, and perform post entry quarantine studies on plants that are regulated to import
- Conducting surveys and surveillance on pests that have been introduced unintentionally or illegally to understand the biology, ecology, reporting their status and developing management options for those pests
- Maintaining relations with relevant international agencies/institutes with regard to phytosanitary aspects
- Developing standards, policies and regulations and coordinating the processes
- Upgrading list of quarantine pests
- Providing with relevant information in order to facilitate International market access for Sri Lankan produce

2.8.4 Progress

The summary of the progress of the pest risk analysis done in the division from 2016 to 2018 is given in the figure 2.1. These activities are needed to be enhanced in the future.

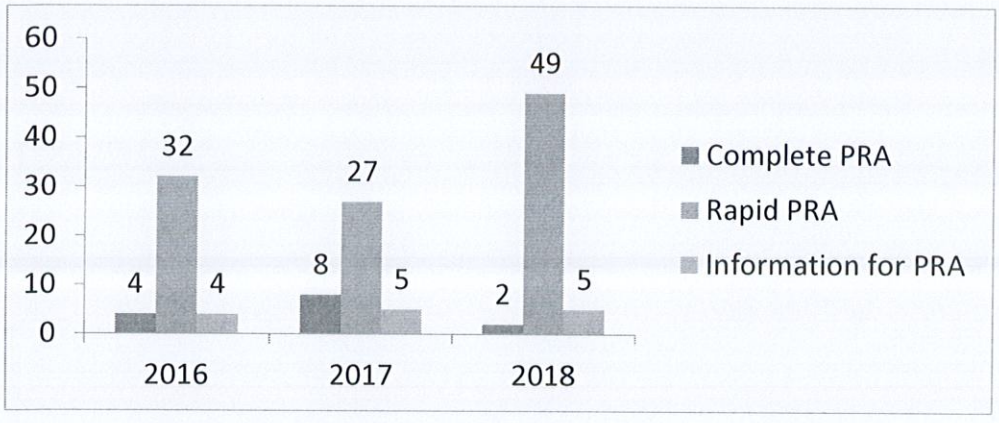

Fig 2.1. PRA completed and information gathered during 2016 to 2018

The division was able to establish new trade relationships for following commodities during the period of 2016 to 2018.

2016

Export of Mangosteen to Egypt
Export of *Cordyline* to Australia
Export of Strawberry fruits to Thailand
Export of *Codiaeum*, *Sansevaria*, *Zamioculcus,* and *Synsephalum* to Thailand

2017

Dragon fruits, Guava, Passion fruits, Mangosteen, Soursop and Rambutan with Australia
Pineapple and Dragon fruits with China
Pineapple for New zealand
Processed Wheat with China
Rice and rice flour with Chile

2018

Importing Barley from Republic of Korea, Ukrain, India, Thailand, Lao PDR for planting purpose
Importing of Dragon fruit
Importing Aloe *vera* for planting purpose from India
Importing dried Pimento berries from Jamaica
Exporting of sea weeds

The pest surveillance activities started in 2018 and are still at the initial stage. The pest surveillance committee was established in 2018 which consisting of DG/Agriculture, an advisory committee, officers from NPQS, officers from other Institutes of DoA, and related Departments/ministries (TRI, RRI, CRI, *etc.*).

Following projects are being carried out at present, by the division.

1. Filling the capacity gap for application of DNA technologies in taxonomy funded by Secretariat of the Convention on Biological Diversity (SCBD) and
2. Use of DNA Barcoding for rapid identification of pests

2.8.5 Observations/General comments

- At present, dependency on PSC of country of origin for imports is very high.
- PRA is not done regularly and need updates once a year with the participation of experts on the subject which is lacking currently
- DNA barcoding (for insect pests) has been commenced, however, yet to be completed
- Quarantine weed species are being revised, currently
- Pest surveillance has been started in 2018. However, no proper mechanism has been established to ensure consistency.
- No proper trainings on PRA have been received by the staff

- Insufficient number of staff would affect the performance of the division specially when pest surveillance data have been received in the future. Also trainings on PRA are lacking.
- Regulations need to be developed as it runs with minimum regulations
- Lack of transport facilities for the staff is also found to be a major constrain

2.8.6 Recommendations/Suggestions

- It is important to ensure participation and contribution of experts in the process of PRA approval thus recommended to appoint a committee comprise of national level experts.
- Development of database on pests, diseases and weeds is vital to enhance the quality standards of the service provided by the division.
- DNA barcoding is being carried out for inspecting pests however, need to extend it towards pathogens and weeds as well.
- Maintaining efficient International relations in order to initiate new trade relationships, market promotions, and to improve market access for Sri Lankan produces
- Establishment of pest surveillance and PRA team

2.9 TREATMENT TECHNOLOGY DIVISION

2.9.1 Vision

Facilitate the International movement of healthy plants and plant products for the development of national agriculture and related industries.

2.9.2 Staff profile

The division consist of seven members under the Assistant Director (Development) (Table 2.20)

Table 2.20 Staff profile of treatment technology division

Name	Designation	Educational Qualification
W.L.C. Wijayasundara	Assistant Director (Development)	BSc Agriculture MSc (reading)
P.R.A. Wijesinghe	Research Assistant	Diploma in Agriculture
T.N.P. Fernandoo	Agriculture Instructor	Diploma in Agriculture
U.R. Weerasinghe	Agriculture Monitoring Officer	BSc Agriculture MSc Agriculture

S.P. Senadeera	Program Assistant	BSc Agriculture
Indika Wijewardane	Agriculture Instructor	Diploma in Agriculture
K.I.T. Fernando	Research Sub Assistant	Diploma in Agriculture

2.9.3 Main functions

- Commercial fumigation for export/ import commodities using Methyl Bromide/ Phosphine (Vacuum and Natural Atmospheric Pressure)
- Online approval for Methyl Bromide fumigations as Sri Lanka is signatory to the Montreal Protocol
- Supervision of fumigation of cargo done by private fumigators to fulfil the requirement of the importing country
- Registration of treatment providers under ISPM 15
- AFAS JSR Auditing to comply with AFAS standards especially to the consignment which needs the AFAS certification
- Support on market access of exported commodities through phytosanitory certification with required treatments to fulfil the requirement of importing country
- Sharing technical information of biosecurity treatment measures of import and export requirements to industries
- Technical assistance to industry processes to meet requirements
- Assessment and taking corrective actions in the critical point of the industry

The division has modern equipment with five fumigation chambers to provide fumigation services for Exports and Imports along with well-equipped Vapor Heat Treatment (VHT) laboratory for experimental purposes and to develop VHT Standards.

The division also concern on the safety of the staff therefore, all kinds of safety equipment for fumigation experiments and service such as gas masks, monitoring equipment, leak checkers, *etc.* are available in the division.

2.9.4 Progress

The Methyl bromide treatment providers under AFAS (Australian Fumigation Accreditation Scheme) during 2014 to 2016 is shown in the table 2.21. There were no new registered treatment providers recorded during the period.

Table 2.22 shows heat treatment providers for wood packing materials under ISPM 15 and it has been observed that some companies have been temporarily suspended due to noncompliance of the guidelines.

Table 2.21. Methyl bromide treatment providers during 2014 to 2018

Treatment provider	2014	2015	2016	2017	2018
Registered	06	04	06	06	06
New registered	00	00	00	00	00
Temporally Suspend	02	00	00	00	00

Table 2.22 Heat treatment providers for wood packing materials under ISPM 15 from 2014 to 2018

Service provider	2014	2015	2016	2017	2018
Registered	30	27	28	28	33
New registration	02	01	01	05	06
Temporally Suspended	05	00	01	00	01

The division carry out various services in relation to fumigation and presented in table 2.23.

Table 2.23. Fumigation services carried out by the treatment division from 2014 to 2018

Activity	2014	2015	2016	2017	2018
Fumigating export commodities	47	36	25	41	37
Fumigating Intercepted (Before Release) commodities	02	04	04	05	06
No. of Fumigation supervisions	626	613	522	499	742
On line approval granted under Montreal protocol	16845	9683	8896	8306	8590

It was noted that the division is engaging in several research and development activities such as NARP – ECO2 Fume (liquid phosphine), AFAS Auditing, registration of heat treatment (HT) providers, upgrading of HT providers and trainings. The training and awareness programs conducted by the division during the period is shown in the table 2.24.

Those programs have been mainly focused on university students and students form other higher educational institutes. This need to be extended to other stakeholders of the NPQS.

Table 2.24. Training and awareness programs carried out by the division during 2014 to 2018

Activity	2014	2015	2016	2017	2018
Trainings	12(**/***)	15(**/***)	15(**/***)	14(**/***)	18(**/***)
Awareness	01	01	02	02	03

** Undergraduate /Diploma Students
*** Pest Control Programm conducted at University of Peradeniya

Several research programs undertaken by the division include, introducing Ethyl Formate (Vapormate) as a fumigant alternative to the methyl bromide, and developing fumigation standards for ECO_2FUME (Liquid phosphine) for the elimination of pests in export agricultural commodities where significant findings have been recorded.

2.9.5 Observations/General comments

- There is a potential for mango export to Japan. Need to carry out feasibility studiy and more research for setting standards. Research on VHT is continuing.
- Thermal division facilities have been occupied by EU inspection unit due to lack of space. This is not a good practice and need to correct.
- MtBr Fumigation done for smaller quantities inside the division and charge Rs. 1000/sample.
- Available staff is not sufficient. Need more staff for new treatments (Ex. VHT, Phosphene regulations, *etc.*). Lack of staff also affect monitoring of treatments carried out by outside registered companies.
- No vehicles are provided for inspections and officers use their own vehicles. Therefore, lady officers find it difficult to go for inspections
- No physical reports available on supervision of fumigations carried out. Only recently started collecting physical reports.
- Post surveillance activities are not sufficient due to lack of resources and staff.
- As a result of transfers experience & knowledge of the candidate is not considered.

2.9.6 Recommendations/Suggestions

- Introduction of monitoring and auditing system for outsourcing treatments
- Introduction of mobile unit for post surveillance activities would be beneficial and also transport facilities for the staff should be improved

- Implementing proper monitoring and auditing system for outsourcing treatments specially for phosphine treatments
- As the treatment fees are found to be not sufficient, it is recommended to introduce new fess structure for the treatments
- Introduction of new fumigants is important to phase out of MtBr
- Development of VHT standards for agriculture commodities
- Safety measures are still found to be not adequate thus, needed to be improved
- As the staff of the division is involved with treatments which are of high risk, it would be encouraging if a risk allowance could be introduced.

2.10 AIRPORT ENTRY POINT

2.10.1 Vision

Facilitate the international movement of healthy plants and plant products for the development of national agriculture and related industries

2.10.2 Staff Structure

Human resources available in the division is as follows. Total Number of Staff: 56

- Administrative Officers:
  - Deputy Director of Agriculture (DDA): 01
  - Assistant Director of Agriculture (ADA): 02
- Technical Staff:
  - Agriculture Monitoring Officer (AMO): 01
  - Program Assistant (PA): 01
  - Agriculture Instructors (AI): 22
  - Research Assistant (RA): 04
  - Technical Assistant (TA): 17
- Non-Technical Staff:
  - Public Management Assistant (PMA): 02
- Supportive Staff:
  - Permanent Labour-03
  - Contract Labour- 03

The above staff is assigned under various divisions as shown in the figure 2.2.

2.10.3 Main functions

- Implementation of Plant Protection Act No. 35 of 1999
- Inspection of exporting plants and plant products and issuance of phytosanitary certificates
- Inspection & plant quarantine clearance of imported plant and plant products

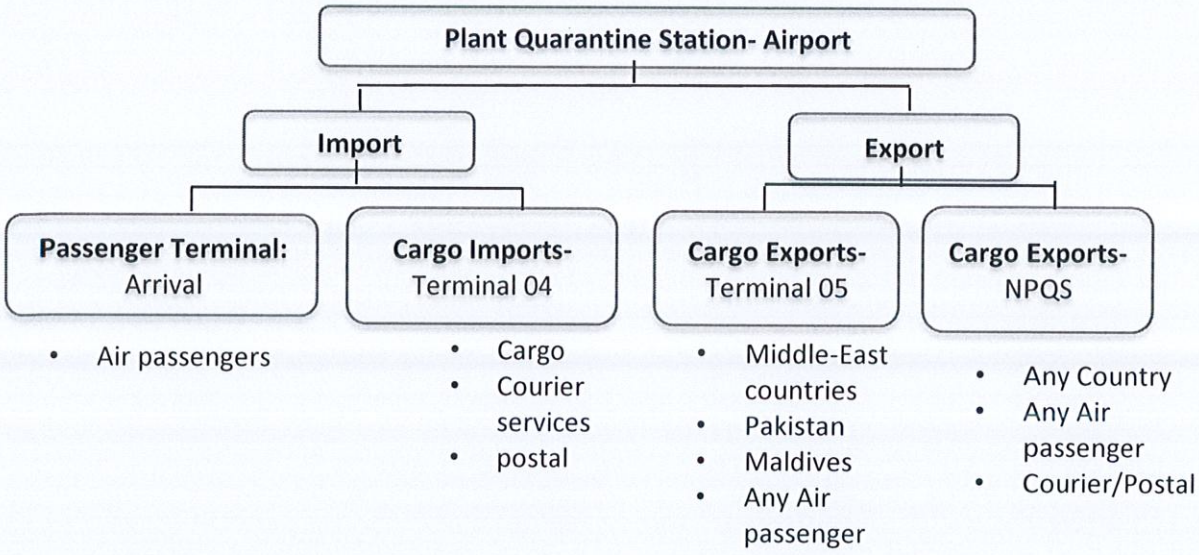

Figure 2.2 The structure of the plant quarantine substation at the air port

2.10.4 Progress

This is one of the key division providing its service and urn income for the Institution. The income generated through import and export inspections is increasing (Figure 2.3).

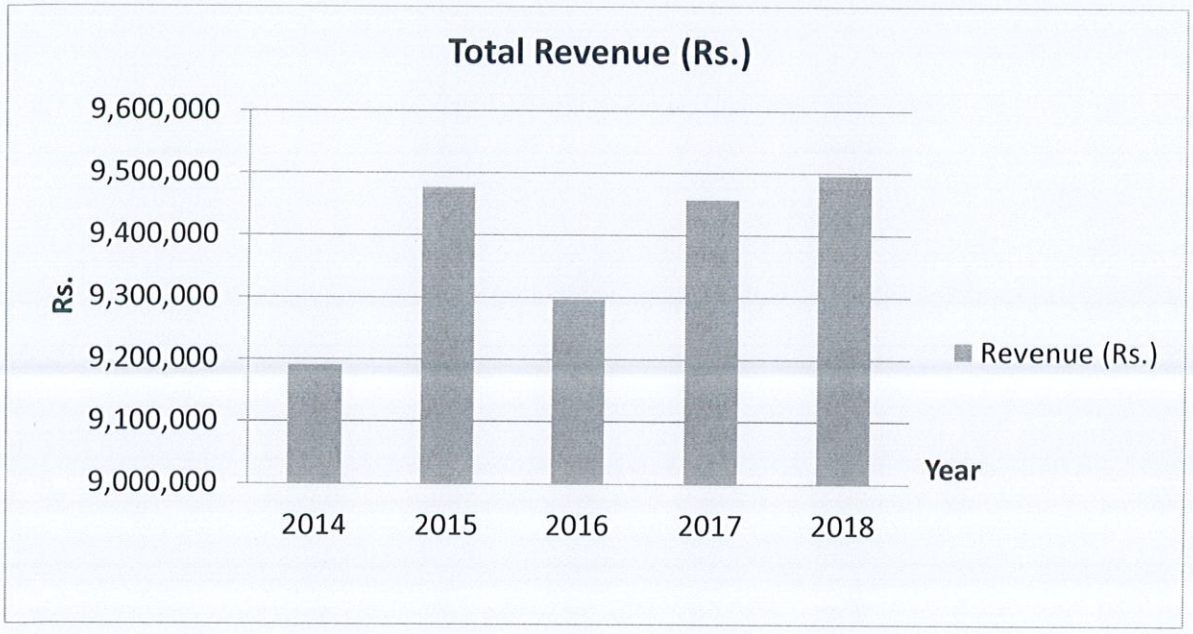

Figure 2.3. Total revenue obtained by the division during 2014 to 2018

Figure 2.4 indicates number of PSCs issued by the division during 2014 to 2018. It is noted that number of PSCs issued has declined during this period.

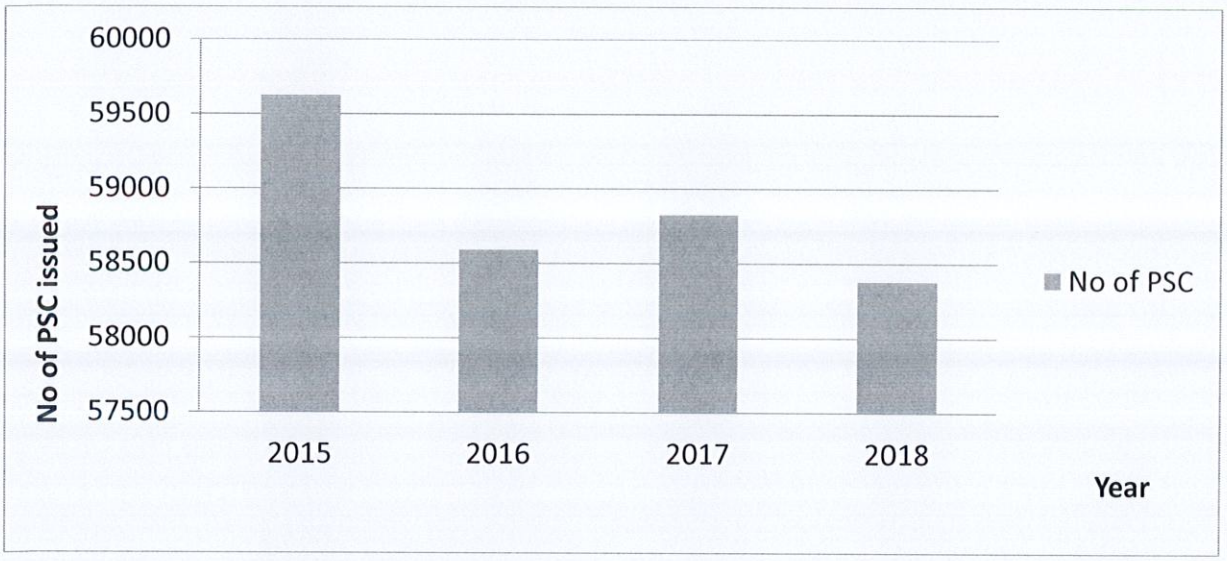

Figure 2.4. No of PSCs issued during 2014 to 2018

Various commodities are being exported through airport and various commodities and their exported quantities are shown in the table 2.25.

Table 2.25. Number of consignments with selected exported commodities during 2014 to 2018

Year	CUT FOLIAGE	LIVE PLANTS	FRUITS	VEGETABLES	COCONUTS	TEA	BETEL	COCONUT PRODUCTS
2015	5394	1445	15350	16861	1003	6600	6421	1271
2016	5239	1450	14549	17685	865	5959	5457	1313
2017	4986	1367	14191	18708	494	5834	5774	1589
2018	4689	1399	14437	18886	347	7364	5192	1887

Figure 2.5 shows unrooted & rooted cuttings, aquatic plants, cut flowers, spices, tobacco and others exported from 2014 to 2018. Spices export reached high among these commodities followed by cut flower and tobacco.

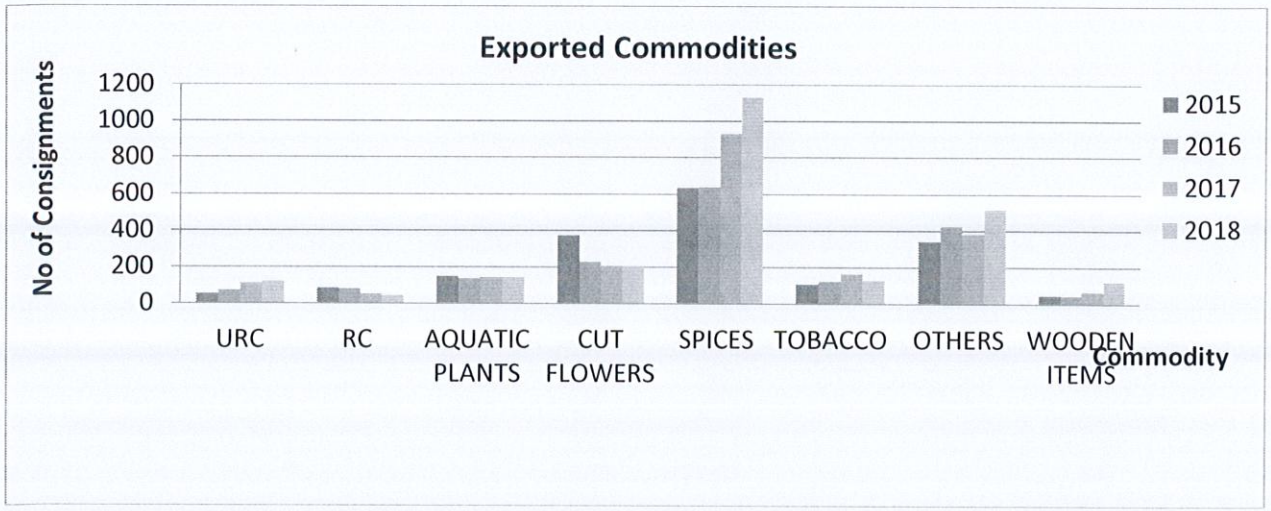

Figure 2.5. Unrooted & rooted cuttings, aquatic plants, cut flowers, spices, tobacco and others exported from 2014 to 2018.

Number of interceptions at the airport passenger terminals has been increased from 2014 to 2018 and shown in the figure 2.6.

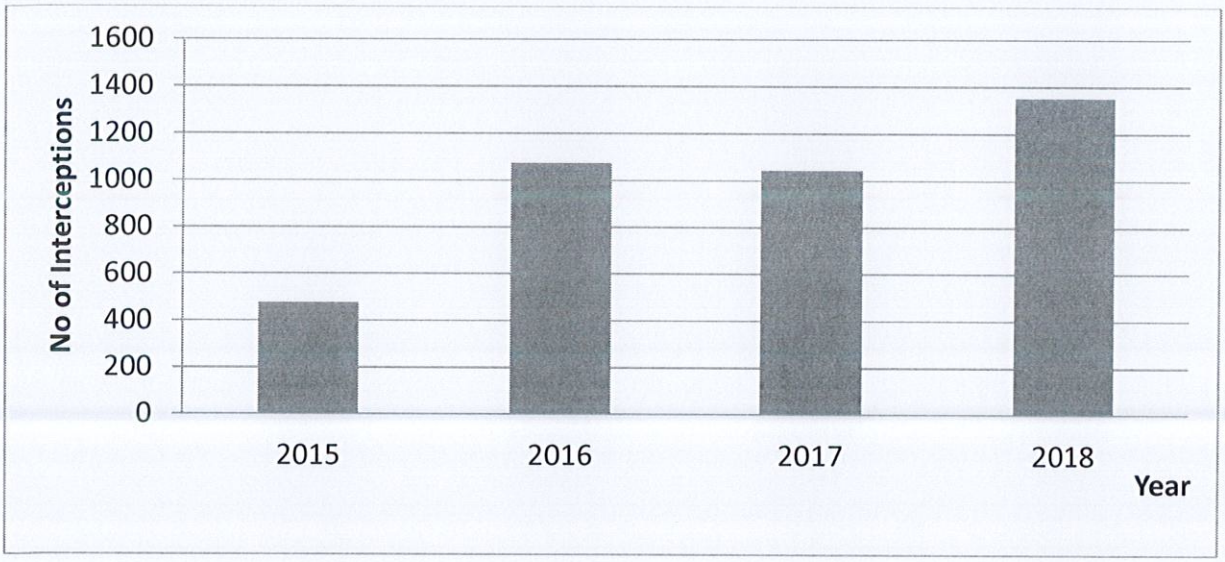

Figure 2.6. Number of interceptions at the passenger terminals from 2014 to 2018

The division successfully undergone the EU audit in 2015. As a recommendation, the export unit for EU and Other countries (except Pakistan, Middle East, Maldives) had shifted to separate section at NPQS premises in 2015 with improved Inspection procedures in a new inspection unit.

Another achievement of the unit include overcoming the risk of banning of export to EU, initiating temporary banned items with certified field program (2015/2016) (Ex. Bitter gourd,

Snake gourd, Mango, Guava), pack house development with NPQS and through these reduction of noncompliance received from EU.

In addition, in 2016, new light boards were established at the arrival, departure, and transit points at the airport.

The construction of a new building for quarantine unit at the airport was initiated in 2018 while, preliminary stage of e-phyto program was also launched.

Another remarkable achievement in the division is that successfully overcoming the risk of possible banning of tea export to Russia due to Cuppra beetle issue.

The phytosanitary certificate was also upgraded with security features in 2018 and considered a good achievement.

Establishing of a new incineration unit for destruction of detained items was initiated and completed in 2019.

2.10.5 Observations / General comments

- No database is being used for issuing of PSCs.
- Additional declarations are given for highly restricted items in this section
- Lack of staff is a serious problem in this division to carry out its operations. Staff working on 24-hour roster where 4 persons per roster is assigned. Due to lack of labours, the roster is operating with 3 personals on Thursdays.
- Internet – data capacity not adequate to perform the duties. Current data capacity is consumed towards the middle of the month. No internet or it is very slow most of the time. Then operation is affected due to slow internet. It was observed that the unit was operating without internet for nearly 2 months. The online feeding system is not functioning.
- The unit require a good computer.
- Currently no facility for customers to submit information through the web instead they carry completed forms in a pen drive and copied in the NPQS computer. This poses lot of security threats to the department including virus contaminations.
- Not enough sitting areas for working officers during full shift and no adequate space for customers/exporters even to sit.
- Air conditioner units breakdowns are not attended for many months and as a result the exports with temperature loggers getting affected due to very high temperature variations for which NPQS can be held liable.
- It was learnt that no quarantine officer can check passengers due to heavy customs involvement which is a major drawback. The role of quarantine officers at passenger terminals is not clear. They can only attend when any mater is referred to them by custom officers.

- A new building has been proposed which is under construction but no parking spaces for officers and stakeholders. Construction which is currently slow has to be expedited.
- Currently, air conditioning is a problem at the airport. The cooling is not enough for the inspection room. Must depend on airport authority for AC.
- Non availability of vehicle and transport is a problem. This is important specialy with garbage issues as they need to be taken away quickly as inspection reports are urgently required. Mostly, the vehicle available is shared with NPQS head office as both are located in the vicinity of each other.
- Disposal at no cost to passengers /importers - No fine has been imposed for illegal imports, and are being disposed at the expenses of NPQS funds. Therefore, it is proposed to introduce a fining system to stop illegal imports and compensate disposal cost.
- Disposal of commodities referred from passenger terminals is a major issue. Due to high diesel cost, the incinerator machine is operated once or twice a week. To operate the incinerator, it requires Rs. 8000/= of diesel per day. Only one incinerator is available at the airport and if broken, no other option for disposal except burning samples that would create environmental problems. The multi chopper has not been installed yet and need to use quickly.
- Passenger sign boards were established recently but no proper care is given by the airport authority. Most of the time, the boards are fallen and stay unattended.
- There are no trolleys available for customers to bring samples for inspection and they carry samples with difficulties- Arrangements should been made after discussing with Sri Lankan airline officers to allow trolleys to the NPQS entry point at the airport.
- Need trainings on taxonomic identification - However, due to roster process, it is difficult to send everyone at once for training therefore, alternative solutions have to be adopted.
- Night shift allowance for officers is very less, amounting Rs. 2500.00 per month and it is paid very late.
- Anomalies in payments structure at airport and seaport have been observed. Ex. For inspections, Rs. 150/= is paid at the airport but no payment for the same activity at seaport.
- Need intervention from quarantine officers in the areas of baggage collection, near x-ray machines, and entry, and exit points.

2.10.6 Observations of the entry points at Mattala airport

- Staff: The station consist of 6 staff including OIC, 3 AIs and 2 labourers. OIC is attached to Research station at Angunakolapalessa, DoA and not available full time. Three AIs are working on a roster. Two labourers are working on contract basis as 8-hour service.
- Quarantine activities are undertaken at the space allocated at passenger terminal in arrival path. No flights have been in operation for nearly a one year.
- Currently, only activity done by the staff is field visits with NPQS staff, if requested.

- Inspections are usually done only if referred by the customs. However, there is no proper space for inspection in the two rooms assigned. If both cargo and passenger terminals work in the future, it requires more space.
- Incineration unit which is gas operated, has been established to dispose / burn commodities.
- No fumigation facilities are available for disinfection.
- No proper training received by AIs other than two day training at NPQS and they were directly assigned at the airport duties which could be a serious mistake. Two AIs directly appointed to Mattala in their first appointment.
- There are facilities to offer Phytosanitary Certificates but only one PSC has been issued in the history. There are two computers fixed and another one is lying without even assembling which was received in line with ePhyto project.
- No internet facilities are available.
- Rs 20,000/= petty cash is available, and the cheque must be collected and cashed at Angunakolapellessa.

2.10.7 Recommendations/Suggestions (Both Mattala and Katunayake)

- It is extremely important to address all the shortcomings stated under the challenges both at Katunayake & Mattala.
- Measures to be taken for joint inspections with custom officers.
- Implement online systems for import & export processes. Ex. ePhyto, single window
- Improving of inspection activities with new building to reduce the noncompliance and improving of export standards
- Initiate laboratory facilities for rapid detection of pests
- Provide training to the technical staff
- Revise fee structure for all activities

2.11 SEAPORT COLOMBO

2.11.1 Vision

Facilitate the international movement of healthy plants and plant products for the development of national agriculture and related industries.

2.11.2 Staff Structure

The unit is operating under a Deputy Director (OIC) with 5 ADAs (4-Development, 3 permanent and 1 contract; 1 Research, contract), 01 MA, 02 AMAs, 13 AIs, 02 Pas, 05 RAs, 06 TAs, one KKS, and 4 labourers of 1 permanent and 3 on contract basis).

2.11.3 Main functions

- Check authorize Sea Fright Imports
- Check authorize Sea Fright Exports
- Issue Phytosanitary certificates
- Handle Permits and Consumption goods
- Handling Rejections or Re-exports

2.11.4 Progress

Seaport is also one of the unit under NPQS contributing income in terms of various services offered. The income generated during 2014 to 2018 through various activities are presented in table 2.26.

Table 2.26 Income generated by seaport from 2014 to 2018

Year	2014	2015	2016	2017	2018	2019 May
No. of PSCs issued	42,743	42,199	43,295	43,605	43,362	19,418
Income from PSCs (Rs)	512,916	506,388	519,540	523,260	520,344	233,016
No. of cargo inspections	42,393	41,747	42,649	43,026	42,868	19,219
Income from inspections (Rs)	6,358,950	6,262,050	6,397,350	6,453,900	6,430,200	2,882,850
Total income (Rs)	6,871,866	6,768,438	6,916,890	6,977,160	6,950,544	3,115,866

2.11.5 Observations/ General comments

- This is located inside the Colombo harbor therefore, it is difficult to access due to high security zone. Customers face same problem and not allowed to carry samples for checking or it is rather difficult. Some sections can be taken outside the harbour where everyone will get easy access.
- No proper transport facilities given for inspections. Most of the time, officers have to depend on exporters which is not a good practice.
- Fumigation is done outside the NPQS through service providers. It was noted that fumigation is currently done even if it is not required. Need attention of treatment division.
- No satisfactory facilities available for customers and officers (Internet, space, *etc.).* The place is extremely crowded due to many customers coming. There is no adequate ventilation as windows cannot open due to dust. No space for storing materials. A new building is to be built under the land ownership of ports authority.

- National single window & ASYCUDA need to be linked with NPQS entry points
- Samples taken for inspections may not represent whole consignment/commodity
- Use of ICT is minimum. Urgently need MIS system, Online logging system though available, due to internet problem, customers bring forms in a pen drive and this can bring viruses, threatening computer at risk.
- Need to link with databases of other country's plant quarantine services (Ex: We have the access to Indian PQS and observe PSCs issued by them therefore, can compare originals of PSC bring by Importers). Some Malaysian goods come with QR code so that, we can verify the PSC issued by them.
- No joint inspections with custom officers and is a serious problem.
- Need networking and uninterrupted internet facilities for the division.
- Technical staff limited, Recruitments have been done due to transfers and found lack of skills.
- No proper trainings were received specially for pest identification and detection.
- Lack of staff, is a common issue. Three Asst. monitoring officer (AMOs) positions were not replaced after transfers, 2 AMOs retired also not filled.
- Need computers for documentation and all works are being done manually with paper entries. If any rat or termite damage, there can be loss of data.
- Export registration section is operating without a single computer!
- Lack of proper training for identification is observed. However, despite of these difficulties, noncompliance percentage is minimum and can be a remarkable achievement.
- Grow out test for Coir export require minimum 25 days to issue PSC. This cannot be minimized. However, other observations were done within 24 hours this is remarkable. For additional declarations, samples are sent to NPQS.
- Recently a vehicle has been assigned to the division and this is a good decision.

2.11.6 Recommendations/Suggestions

- Need to improve working conditions and infrastructure
- Expedite linking with databases - of other country's Plant quarantine services
- Carryout proper training for pest identification.
- Need to establish online issuing & payment system for PSC
- Officers require basic computer trainings.
- When recruiting/cadre filling, it needs selecting skilled persons with experience

3. OVERALL JUDGMENT

Overall judgment on the different aspects based on the information collected on aspects listed under guidance for the performance review (Strengths and good practices found by the reviewers in each aspect has been highlighted. Any weaknesses identified have also been described)

The following aspects of management and output based on the performance of the Institution is been assessed as "Strong", "Moderate" of 'Weak"

"Strong" = Always used/ always considered/ involved/analyzed
"Moderate" = Occasionally used/ considered/ involved/analyzed
"Weak" = Not used/ Not considered/ Not involved/Not analyzed

3.1 Assessment of Institutional response to its mission and interpretation of the organization

Management practice	Level of Practice (Performance Indicators)			Comments
	Strong	Moderate	Weak	
1. The institution is responsive to government policies and development goals and are being used / considered in planning organizational strategy	✓			The Institute is already aligned with the government policies and development goals however, there are major shortcomings need immediate attention (Equipment, trainings, delays in implementation of policy changes)
2. Research and development focusses on immediate and long term needs in Sri Lanka			✓	Valid attempts have been noted but, not focused on long term advanced research technologies of the plant quarantine aspects
3. Transferring technological recommendations / research outcomes to relevant stakeholders			✓	Thought there is a need for acquiring technical knowhow by the trade, the required communication platform hasn't been built with a proper annual calendar of events

4. The policies and directives of the SLCARP and the relevant ministry regarding the appropriateness of institution's vision and mission	✓			
5. Appropriateness of the roles of relevant partners in the formulation and implementation of the Institution's research strategy and priorities	✓			Current research are appropriate however, further enhancement is required (Ex. Island wide study on Cuppra beetle existence)
6. Conservations of the natural resources, impact of Institutions practices on natural environment and long term environmental sustainability		✓		Strong presence of NPQS officers at all entry and exit points in collaboration with SL Customs is expected for intensive inspections.
7. Factors such as strengths, weaknesses, threats and opportunities are considered in strategic planning	✓			
8. Stakeholders needs are taken into consideration in strategic planning		✓		Certain needs of stakeholders have been considered favourably (Ex: ePhyto), however, additional critical needs are to be in place such as facilitating exporters for convenient access for inspections (Independent location / outside high security zones)
9. The extent to which staff members are involved in strategic planning		✓		
10. Government allocations and alternative funding opportunities (donor funding) are considered in strategic planning		✓		
11. The extent to which policies and plans of the organization are reviewed and updated			✓	Efforts made in gathering external information and updating databases are largely insufficient. (Ex. No country specific quarantine pest records in hand)

Additional observations (if any)

- No strategic plan for the Institution, other than feeding information on request for developing strategic plan
- No mission statement
- Preparedness for national single window (NSW) in terms of internal automation, establishing of SOPs, KPIs is unsatisfactory
- Tractability is lacking
- Providing online platform for trade including charges and fees for services rendered is required
- Amending the act getting delayed

3.2 **The objectives, and relevance of the present program of work, budget, and its forward plans for the next 5 years**

Management practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	Strong	Moderate	Weak	
1. National development goals are considered in planning programs & setting priorities		✓		There are gaps identified
2. The institution's mandate and its criteria for allocation of resources and planning procedures adopted by the institutions and the mechanisms for their formulation.			✓	Observations have been made in identifying gaps in the formulating of mechanisms (Ex. Ensuring competent and skilled officers at appropriate functional points- airport, seaport, field inspections, *etc.*)
3. The Institution's rationale for it's present allocation of resources among research extension, information exchange, and other activities			✓	Unavailability of having proper coordination of managing expert trained resources, resulting of not having proper information exchange and other activities.
4. The extent to which the staff of the institution participate in programme planning and priority setting		✓		

5. The extent to which the availability of funds (government allocations and other funds) generating funds are taken into consideration in planning programmes		✓		

Additional observations (if any)
Although general inputs have been obtained from the relevant staff, it is not fully adequate when formulating long-term programs. Ex. A five day workshop with the participation of staff with detailed analysis / need assessments are proposed.

3.3 The content and quality and relevance of the scientific work.

Management practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	Strong	Moderate	Weak	
The results of research during the past 5 years and their practical applicability and economic feasibility including the impact on the relevant sector			✓	Overall research conducted and findings in terms of content and quality inadequate due to not having proper planning and monitoring mechanism. Further, noticed that only a few research initiatives have taken place due to lack of "separate research fund" within the Institution.
2. The current and future research plans and the role of the various scientific discipline therein		✓		The extent and the depth of research plans on various scientific disciplines are lagging behind and inadequate. Ex. DNA barcoding of insect pests covering whole country
3. The degree and the extent to which the specific needs of the various stakeholders were studied and analyzed in the formulation of the past and current research plans		✓		Due to not having a data base for updating quarantine pests for different commodities and different countries in line with future trade trends

4. The information exchanged and extension programs and the participation of the research staff therein			✓	Inadequate participation of research staff in relevant research fora observed. It requires more overseas exposure for the staff. Create a knowledge sharing platforms with outside experts such as Universities, Research Institutes, and foreign scientists.
5. The adequacy of the research support and facilities			✓	Though facilities are available for research, the support extended was not satisfactory.
6. The management of scientific and financial resources of the institution and the coordination of its activities		✓		Lack of segregation of financial and scientific duties – Non availability of a Shroff for cash management, No online connection between divisions to share scientific data
7. Level of national and international recognition of the institution and its scientific staff		✓		Observed serious shortage of qualified personals effecting the due international recognition for the Institution and the staff
8. Corporation/collaboration with universities, regional and international research organizations		✓		Currently, the status is not satisfactory due to no firm networking among Institutions. However, need to strengthen the connections based on sustainable mechanism
9. Adequacy of publications of research findings			✓	Require latest research updates on websites. Need to motivate staff to take on more research work and to implement rewards & due recognitions for same.

10. Partnership with private sector is encouraged by the institution			✓	No proper mechanism in place to partner with private sector to establish a structured process for collaborative research.
11. The degree to which adverse effects on environment are considered		✓		Change from Methyl bromide to Phosphine gases initiative is commendable. Post quarantine inspections are not satisfactory due to lack of follow-ups and due to limited human and physical resources.

Additional observations (if any)
Motivation of staff on research is seriously weak during past period. More funds to be diverted for research. Need to establish encouragement among staff by way of appropriate rewarding and recognition systems.

3.4 The impact and usefulness of the Institute activities

Management Practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	Strong	Moderate	Weak	
1. The recorded and potential impacts of the institution's research	✓			Remarkable achievements have been made (Ex. Fruit fly research, Tissue culture plants). Similar initiatives need to be continued and reviewed periodically
2. Corporation with other research Institutes and with national development programs, private sector organizations and other stakeholders			✓	Lack of proper corporation mechanism observed and to strengthen initially within the Department of Agriculture (Ex. Island-wide pest surveillance) and other related organizations

3. Is the progress of the procedures and activities of the Institution measured periodically and whether required actions taken addressing the gaps			✓	Overall evaluation on all operation areas to be carried out and structured plan has to be established.
4. The extent to which quality assurance of the Institute activities have been audited periodically			✓	Need to introduce periodical review mechanisms

Additional observations (if any)

3.5 Examine the extension program of the Institution

Management Practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	Strong	Moderate	Weak	
1. Its effectiveness in the relevant sector			✓	It is essential to educate importers and exporters on plant quarantine laws and currently there are no proper mechanism adopted
2. The effectiveness of its information exchange programs and the time lines, quality, and relevance of the technologies generated and its publications		✓		
3. The effectiveness of transferring technological recommendations based on research outputs	✓			The knowledge and technologies developed have been effectively transferred to stakeholders satisfactorily

4. Mechanism adopted to get the feedback of stakeholders on research outputs and then planning future R&D.			✓	
5. The identification of the problems and constrains impeding the extension programs/dissemination of technological recommendations to the stakeholders			✓	

Additional observations (if any)

3.6 The quality and the effectiveness of the management of the Institution

Management Practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	Strong	Moderate	Weak	
1. The ability of the institution to carry out its mandate and the assigned statutory powers		✓		Although the plant quarantine act has empowers related functions, operationally the execution of activities at entry and exit points are hindered due to other authorities domination was observed.
2. Adequacy in coordination to ensure excellence of the NPQS related activities		✓		
3. Competency and professionalism of the directorate and the senior management of the Institution and the definition of roles, organization and quality of the leadership of the Institution and rapport with staff	✓			However, it was observed that more qualified persons are required to lead the divisions including filling up permanent cadre vacancies at all levels.

4. Nature of the budgetary review and evaluation process and the involvement of important stakeholders in the above stability of funding and the relationship between budget, Institutes, policies and plans and the effectiveness of utilization of resources		✓		
5. Procedure for determining staffing requirement at all level for selection, evaluation, and compensation of staff		✓		Using the services of retired officers is not a sustainable but a good attempt as a short-term solution. Most competent and subject qualified personal to be recruited.
6. Administrative of fiscal, purchasing and supply, personal computers, housing and other facilities including transport and general management services and their effectiveness in supporting scientific staff		✓		Serious shortcomings observed and immediate attention is required on the areas such as, operational space, equipment, internet facilities, utilities, *etc.* enabling staff to perform better.
7. Infrastructure (buildings, stations, fields, roads), equipment and vehicles are satisfactorily maintained.			✓	Critical needs have been unattended or have lengthy procedures to adhere. (Ex. Vehicle/office Air conditioner repairs *etc.*, Lower approval limits for the Additional Director, *etc.)*
8. The effectiveness of procedures to ensure that equipment are in working order			✓	SOPs to be established, Permanent technician is needed
9. The effectiveness of the institution's overall strategy in generation and proper utilization of funds		✓		However, fund allocation is not sufficient to execute its all activities

10. The extent to which the institution identifies opportunities for income generation and cost recovery			✓	Lot of opportunities are available for generation of funds through efficient and effective services however, not explored this opportunity

3.7 Services provided by the Institution

Management Practice	Level of Practice (Performance indicators)			Comments/ Evidence
	Strong	Moderate	Weak	
1. Consultancy and advisory services		✓		
2. Laboratory services	✓			Highly commendable even with lack of facilities
3. Pest control and fumigation of warehouses	✓			Performing well with the partner organizations supporting the trade. Need to strengthen further with transport and staff facilities.

3.8 Managing information dissemination and partnership

Management Practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	Strong	Moderate	Weak	
1. The institution systematically plans and performs dissemination of information			✓	
2. The extent to which the institution plans and maintains linkages with key partners for sharing and dissemination of information			✓	
3. The effectiveness of institutional procedures for technology transfer			✓	

4. The effectiveness of the system to obtain feedback from different types of stakeholders			✓	

Additional observations (if any)
There is no proper mechanism observed in order to manage information dissemination and partnership. This is very important when compared to the type of stakeholders dealing with the Institution and its services.

3.9 Monitoring, evaluation, and reporting

Management Practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	Strong	Moderate	Weak	
1. The institution monitors and evaluates (M&E) its own activities periodically		✓		
2. M&E is supported by an adequate management information system (MIS), which includes information on projects (e.g. costs, staff, progress, and Results).			✓	It is high time management information system introduces and monitor its progress
3. The extent to which S& T results and other outputs are adequately reported internally (e.g. through reports, internal program reviews, seminars).		✓		
4. Eexternal stakeholders contribute to the M & E process in the institution			✓	
5. The extent to which the results of M&E are used for project/ research planning and decision-making.		✓		

4. STRENGTH, WEAKNESS, OPPORTUNITIES & THREATS OF THE INSTITUTION (SWOT ANALYSIS)

4.1 Strengths

- Positive policies of the Government/Policy makers
- Increasing demand/Public perception for quarantine activities
- Qualified and experienced staff
- Staff with diverse qualifications
- Harmonize procedure to issue phytosanitory certificates
- Vast space and infrastructure availability
- Strong linkages with other agricultural institutes/stakeholders
- International linkages and supports
- Research and development support from various private and public organizations

4.2 Weaknesses

- Insufficient infrastructure in the Airport and Seaport premises
- Long administrative procedure
- Inadequate financial allocation
- Poor technical upgrades
- Poor networking and IT facilities
- Strong dependency on paper-based system
- Lack of traceability and statistical data
- Lack of research and development activities
- Lack of quality control mechanisms and modern technologies
- Lack of training and scholarships for the staff
- No incentives and rewarding system for the staff
- Inadequate and untimely information on world trends
- Poor linkages among key stakeholders

4.3 Opportunities

- High potential for increased income generation
- Greater scope for service expansion
- Increased private sector involvement
- Space availability for infrastructure improvements
- International collaborations
- Legislation for establishing e-phyto system
- National single window

4.4 Threats

- Erratic fluctuation in world trends
- Ever increasing standards by the developed countries
- Legal enforcements of developed countries
- Bureaucracy
- Excessive dependency on outdated procedures
- Reactions of pressure groups

5. OVERALL RECOMMENDATIONS AND SUGGESTIONS

Investment on NPQS is worth considering amount of damage could be expected if unwanted pest enters the country. Therefore, following recommendations are made in order to upgrade NPQS activities in the future.

a). The existing Plant Quarantine Act should be revised/amended in order to,

- Empower the officers to make inspections of carriers such as vehicles, ships and aircrafts without any prior approval/request coming from the Custom
- Empower the officers for searching persons, baggages, packages, conveyances or any other regulated articles upon entry into or exit from Sri Lanka
- Empower the officers to direct at the owners expense, the treatment or disposal, including reshipment and confinement in quarantine sites, of plants, plant products and regulated articles for preventing the spread of regulated pests
- Minimize possible resistance arising from Custom for clearance of the consignments and to ensure harmonization of Plant Protection Act and Custom Act in case of importing and exporting plant product clearance
- Establish online system of operations across all the functions/divisions which could be finally integrated with the National Single Window. Such an online system could provide traders with facilities such as online submission, licensing, and payments.
- Enhance the legal and policy framework for e-certification
- Introduce new charging system enabling the NPQS to reach the state of self- sustain

b). The NPQS should be recognized as a separate Institute which is operated under a Director

- Recurrent and procurement procedures could also be handled efficiently when the Institute operates under a Director
- The structure of the NPQS should not be changed time to time without a comprehensive review of the performance
- Immediate measures should be taken to fill the staff vacancies including the Division Heads (Example: Entomology division)

- The NPQS should have a financial unit with a Bursar and a Shrof through which an efficient financial management and customer service could be ensured or make an appropriate arrangement.

c). The service of the staff of NPQS should be recognized as a special service

- The staff should be provided with periodical overseas trainings relevant to their specialized areas
- Their transfers and replacements should be done in line with their subject knowledge and the experience.
- All the divisions should have well-structured KPIs and the staff should be provided with incentives based on the KPIs.

d). Infrastructure facilities of NPQS should further be improved

- The divisions/unites located at the Airport and Seaport should be relocated with adequate space to ensure smooth functioning and better working environment.
- The inspection rooms at the Airport and Seaport should be provided with uninterrupted air conditioned facilities, adequate space and creating customer friendly environment.
- The divisions/unites at the Airport and Seaport should be provided with uninterrupted Internet facilities.
- Transport facilities of the staff should substantially be improved with acquiring more vehicles to the NPQS.

e). Identification and monitoring works of the laboratories in NPQS should be strengthened

- It is necessary to supply advanced equipment with updated protocols (For Example: Entomology division needs scanners which can detect pests or their damages inside fruits/seeds).
- Measures should be taken to avoid any service interruption due to lack of tools/equipment (For Example: Any breakdown of the single microscope available in Entomology division can interrupt its service). Further, obtaining a service of full time technician for maintaining laboratory equipment is utmost importance.

- Regular quality control system should be established through uninterrupted provision of quality-certified laboratory equipment, chemicals/reagents, and supplies.
- Appropriate measures should be taken to maintain a reliable backup system for all the laboratory procedures.

f). Appropriate linkages and collaborative works with the other related scientific organizations (Research Institutes, Universities, and International Organizations) should be promoted

- Such collaborative work would be much effective in curtailing the establishment/spread of exotic pests/pathogens
- Collaborative works and linkages would be much effective in eradication programs to counter the effects of exotic pests/pathogens

g). Separate budget allocation should be there for research and development works.

h). Periodical trainings/awareness sessions should be conducted for the stakeholders in order to keep them updated on the relevant world trends.

i). e-Commerce trade is a new development in the businesses around the world. Around 8000 to10000 exchanges take place in the country through e-Commerce/online shopping. It is needed to allocate quarantine officers in main post offices where custom officers on duty. Also, it is needed to issue PSC for items circulated through e-Commerce.

j). Introducing sniffing dogs at passenger terminals would be of greater importance when detecting plant based imports.

k). Introducing uniforms / making it mandatory to wear uniforms and carrying IDs at seaport and at field inspections are also proposed.