

Strengthening and Modernization of Pest Management Approach in India (SMPMA) and Integrated Pest Management (IPM)

Introduction: Chemical pesticides played a major role in minimizing the crop loss due to pests & diseases however, indiscriminate and non-judicious use of chemical pesticides in agriculture has resulted in several associated adverse effects such as destruction of bio-control agents, development of resistance in pests, pest resurgence, human and animal health hazards, pesticides residues in food, fruits and vegetables, fodder, soil and water, ecological imbalances and environmental pollution etc. Therefore, Govt. of India has adopted Integrated Pest Management (IPM) as cardinal principle and main plank of plant protection in the overall Crop Production Programme since 1985. IPM is an eco-friendly approach which encompasses cultural, mechanical, biological and need based chemical control measures. The IPM approach is being disseminated through various schemes/projects at national and state level.

Department of Agriculture, Cooperation & Farmers Welfare (DAC&FW) in the Union Ministry of Agriculture & Farmers Welfare promotes the Integrated Pest Management (IPM) approach under the scheme “Strengthening & Modernization of Pest Management” through 35 Central Integrated Pest Management Centres (CIPMCs) located in 29 States and one Union Territory. The mandate of these Centres is pest/disease monitoring, production and release of bio-control agents, conservation of bio-control agents and Human Resource Development in IPM by imparting training to Agricultural Extension Officers and farmers at the grassroots levels by organizing Farmers' Field Schools (FFSs) in the farmers' fields.

In 13th Five-year plan EFC Memo, Government of India, Ministry of Agriculture & Farmers Welfare, Department of Agriculture, Co-operation & Farmers Welfare (DAC&FW) has launched a scheme “Sub Mission on Plant Protection and Plant Quarantine (SMPPQ)” under Green Revolution (Krishonnati Yojana). Under SMPPQ, Strengthening and Modernization of Pest Management Approach in India (SMPMA) is a major component that harnesses the practices of crop production in a holistic manner. SMPMA has become one of the components of this submission with mandate to popularize adoption of Integrated Pest Management (IPM) through training and demonstration in crops inter-alia promotion of biological control approaches in crop protection technology.

Mandate- Promotion of IPM in Plant Protection under the overall crop production programme.

Objectives:

- Minimize the crop losses caused by pests and diseases.
- Encourage farmers to use various ecologically sustainable pest management approaches rather than relying only on chemical pesticides.
- Promote use of bio-pesticides & bio-control agents in plant pest management.
- Conserve the diverse Agro- ecosystem for build-up of various natural enemies for plant pests.
- Create awareness amongst farmers on
 - (i) Safe and judicious use of chemical pesticides
 - (ii) To follow the label claims and instructions on dose and use as approved by CIB&RC.
- Survey and surveillance for pest and diseases with main emphasis to forewarn the farmers on the potential epidemics of plant pests.
- Popularizing IPM in farming community by imparting training to Agriculture / Horticulture Extension Functionaries and Farmers at Grass Root Level by organizing Farmers Field Schools / 2 days / Five days HRD programmes and Season Long Training Programmes of 30 days. In these programmes, they are being trained on latest IPM technology and to adopt organic farming and bio-fertilizers as well.

Activities:

- Popularizing IPM approach among farming community.
- Conducting regular pest surveillance and monitoring to assess pest/disease situation.
- Rearing biological control agents for their field use and conservation of naturally occurring bio-agents.
- Promotion of bio-pesticides and neem based pesticides as alternative to chemical pesticides.
- To play a catalytic role in spread of innovative IPM skills to extension workers, land farmers equally to resource-poor and resource-rich states.
- Human Resource Development in IPM by imparting training to master trainers, extension workers and farmers through farmers field schools (FFSs) .
- HRD programme (short duration) courses of two days and five days for Pesticides Dealers/NGOs/Graduates/Post-graduates/Private Entrepreneurs and progressive farmers.

- Season Long Training (SLT) programme on major agricultural/horticultural crops.

Present Status of Central IPM Centres- 35 CIPMCs in 29 States and 1 UT.

Annual Target (2018-19)

(i)	Pest monitoring	9.00 lakh ha.
(ii)	Field release of bio- control agent	2200 million
(iii)	Area Coverage (Augmentation & conservation of bio-control agents)	9.4 lakh ha

IPM Trainings & Demonstrations (2018-19)

(i)	Farmers Field School	720 (Nos.)
(ii)	Human Resource Development Programme (2days)	122 (Nos.)
(iii)	Human Resource Development Programme (5days)	60 (Nos.)
(iv)	Season Long Training Programme (SLTP)	04 (Nos.)

IPM Achievements (since 1994 to March, 2018)

(i)	Pest monitoring	282.07 lakh ha
(ii)	Field release of bio- control agent	55560 million
(iii)	Area Coverage (Augmentation & conservation of bio-control agents)	161.78 lakh ha

IPM Trainings conducted (since 1994-2018)

(i)	Master Trainer's Training courses (Seasons Long Trainings) conducted on Various Agricultural/ Horticultural crops.	73 Nos
(ii)	Master Trainers Trained through SLTP	2920 Nos
(iii)	Farmers' Field Schools organized (CIPMCs/KVKs/SAUs)	18015 Nos
(iv)	Agriculture/Horticulture Extension officers Trained	58780 Nos
(v)	Farmers trained	540450 Nos
(vi)	Human resource Developments Programmes (2 & 5 days duration) on IPM	1306 Nos

(vii)	No. of AEOs, Pesticide dealers, NGOs, Lead Farmers, Private Entrepreneurs etc. trained.	52240 Nos
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IPM Package of Practices - IPM Packages have been developed for 87 crops which include Rice, Wheat, Maize, Sorghum, Pearl Millet, Black gram, Green gram, Gram, Rajmah, Pea, Groundnut, Soybean, Rapeseed/Mustard, Sesame, Safflower, Castor, Sunflower, Potato, Onion, Tomato, Cruciferous Vegetables, Leguminous Vegetables, Cucurbitaceous vegetables, Brinjal, Okra, Chillies, Cotton, Sugarcane, Tobacco, Citrus, Pineapple, Sapota, Pomegranate, Grapes, Apple, Mango, Guava, Banana, Litchi, Papaya, Apricot, Peach, Pear, Cherry, Walnut, Ber, Amla, Small Cardamom, Large Cardamom, Black Pepper, Coriander, Cumin, Fennel (Saunf), Ginger, Coconut, Cashew, Arecanut, Oil Palm, Tea, Jack fruit, Spinach, Broccoli, Loquat, Strawberry, Olive, Watermelon, Lablab bean, Garlic, Betelvine, Fig, Phalsa, Saffron, Custard apple, Persimmon, Kiwi, Passion fruit, Raspberry, Clove, Coffee, Curry Leaf, Drumstick, Fenugreek, Horsegram, Lentil, Moth bean, Mint, Redgram, Tapioca, Turmeric. These packages have been revised and uploaded on the website. http://ppqs.gov.in/ipmpakpra_revised.htm

Posters, Manuals & Farmer's Field Guides prepared – Manual in Hindi & English on Rice and Cotton for Subject Matter Specialists (SMS).

- Standard Operating Procedure for Integrated Pest management
- Farmers field guide in Hindi & English on Rice and Cotton.
- Handbooks on diagnosis and Integrated Pest Management of cotton pests in English, Hindi, Punjabi, Telugu languages.
- Folders on IPM in Cotton in Hindi, English, Punjabi and Telugu.
- Posters in Hindi & English in Cotton and Rice for recognition of pests and natural enemies.
- Safe use of Pesticides-Banner prepared

Grants-in-aids to States - To supplement the State efforts, grants-in-aid has been earmarked to the States/UTs for the establishment of Biocontrol Laboratories (SBCLs) @ Rs. 80.00 lakh per laboratory. So far, a sum of Rs. 1882.9625 lakh has already been released to the States for construction of Laboratory building and procurement of equipments and vehicles. All the States except Jammu & Kashmir and Uttaranchal have made considerable progress in the construction work and commissioning of the laboratories. States may consider expeditious commissioning of

the SBCLs so that additional infrastructure is created in the States for mass production of bio-control agents.

Further, Grants-in-aid is proposed to be given to NGOs for setting up of State Bio-control Laboratories in the form of subsidy @ Rs, 5.00 lakh per Laboratory for purchase of equipments subject to the conditions given in guidelines. The guidelines have already been circulated to all the States and the same may be brought to the notice of all concerned.

Bio-control Laboratories/ Units in India

(i)	CIPMCs	35 Nos
(ii)	ICAR/ SAUs/ DBT	49 Nos
(iii)	State Bio-control Labs	98 Nos.
(iv)	Private Sector Labs	141 Nos.
(v)	Private Labs covered under Grant in Aid of Government of India	38 Nos.
	Total	361 Nos.

Locust Control and Research

The Indian Agriculture is highly prone to Desert Locust. The Desert Locust is a transboundary pest which can cause irreparable damages. In order to keep the menace of locust at bay Locust Warning Organization (LWO) has been established. The Locust Warning Organization is aimed to detect the local breeding in Scheduled Desert Areas and incursion of exotic locust swarms into India. LWO keeps itself abreast with the prevailing locust situation at National and International level through periodically Desert Locust Bulletins of FAO issued by the Desert Locust Information Service (DLIS), AGP Division Rome, Italy.

Survey are conducted regularly wherein data is collected by the field functionaries from the fields which are transmitted to LWO/locust circle offices (LCOs), field HQ Jodhpur and Central HQ Faridabad. The data is then compiled and analysed to forewarn the probability of locust upsurges and outbreak. The locust situation is appraised to the State Governments of Rajasthan, Gujarat and other states with the advice to gear up their field functionaries to keep a constant vigil on locust situation in their areas and intimate the same to nearest LWO offices for taking necessary action at their end.

Directorate of Plant Protection, Quarantine and Storage is responsible for adoption of suitable control strategy in Scheduled Desert Area. However, the liability of locust control in cropped areas lies with the State Government. Lot of innovations have been made in the field of locust survey and surveillance for quick transmission of locust survey data, their analysis, decision making, mapping of survey areas through computerization, adoption of new software like eLocust3 and RAMSES. In addition, India is also a member to the of FAO Commission for Controlling Desert locust in South West Asia (SWAC) and FAO Desert Locust Control Committee. In the 12th FYP, the following activities have been undertaken by LWO through its locust circle offices:

SL. No.	Name of the Activities undertaken 12th FYP i.e. 2012-13 to 2016-17	Achievements
1	Survey/ surveillance (lakh ha)	886
2	Fortnightly Locust Bulletin	118
3	Indo-Pak border meetings	30

The objectives of Locust Control and Research are as follows:

- To protect standing crops and other green vegetation from the ravages of Desert locust
 - To monitor, forewarn and control the desert locust in the Scheduled Desert Area (SDA) in the States of Rajasthan & Gujarat being International obligation and commitment.
 - To conduct research on in respect of bio efficacy trials with new generation pesticides / bio pesticides against locusts and grasshoppers in the Laboratory at Field Station for investigation on Locusts, Bikaner (Rajasthan).
 - To maintain liaison and coordination with National and International Organizations.
- Human Resource development through training and demonstration for staff of Locust Warning Organization (LWO), State officials, BSF personnel, Farmers and other Stake holders.
- Maintain control potential to combat locust emergency by organizing locust control campaign

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Year-wise outputs/deliverables of Locust Control & Research in a tabular form-Annexure-I

SL. No.	Name of Components	2017-18	2018-19	2019-20
1	Survey/Surveillance(lakh ha)	150.00	150.00	150.00
2	Fortnightly Locust Bulletin	24	24	24
3	Indo-Pak border meeting	6	6	6
4	Locust awareness training	20	20	20

Action Plan (2017-18 to 2019-20):

Outlay for the component locust control & Research for next three years

(Rupees in Lakh)

Annexure-II

Head	Sub Head	2017-18	2018-19	2019-20
A	Recurring			
010201	Salary	1672.00	1839.00	2166.00
010203	Wages	3.20	3.40	3.60
010206	Medical Treatment	25.00	27.00	29.00
010211	Domestic Travel Expenses	45.00	50.00	55.00

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010212	Foreign Travel Expenses	10.00	15.00	15.00
010213	Office Expenses	70.00	77.00	85.00
010214	RRT	5.00	0.00	0.00
010216	Publication	1.00	1.10	1.20
010220	Other Adm. Expenses	1.00	1.00	1.00
010221	Supplies & Material	8.00	10.00	12.00
010227	Minor Works	50.00	50.00	50.00
010228	Professional Services	0.00	0.00	0.00
Total(A)		1890.20	2073.50	2417.80
B				
010251	Motor Vehicle	150.00	160.00	160.00
010252	Machinery & Equipment	10.00	10.00	12.00
010230	Contractual Services	8.00	11.00	11.00
	Capital	50.00	0.00	0.00
Total (B)		218.00	181.00	183.00
Total (A+B)		2108.20	2254.50	2600.80

Implementation of Insecticides Act

Central Insecticides Board & Registration committee (CIB&RC)

The Government has enacted the Insecticides Act, 1968 regulates the import, manufacture, sale, transport, distribution and use of Insecticides with a view to prevent risk to human beings, animals and for matters connected therewith. The Insecticides Rules, 1971 have been framed under the Act. Implementation of the Act is the responsibility of both, Central and State Governments. The Central Government is responsible for registration of insecticides whereas, the State Governments are responsible for enforcement of the provisions relating to manufacture, sale, transport, distribution and use of insecticides. The Central Government and State Governments are jointly responsible for quality control.

- (1) The main objectives of the CIB&RC include:
- i. Processing of applications for grant of registration of Insecticides, Including scrutiny of
 - a) legal requirements;
 - b) scientific data on Chemistry of the molecule/formulation;
 - c) scientific data on the efficacy, including metabolism and persistence, and working out approved usage of the insecticide and its formulation(s);
 - d) scientific data on safety of the insecticide;
 - e) information/data on packaging of the insecticide; and
 - f) Verification of shelf-life claims of insecticides.
 - ii. Issuing of certificates of registration after approval by the RC;
 - iii. Dealing with the cases for inclusion of new insecticides in Schedule to the Act;
 - iv. Processing of post registration matters of insecticides;
 - v. Issuing import permits for import of sample quantities of insecticides for research, test and trial purposes;
 - vi. Issuing import permits for import of import insecticides for non- insecticidal uses;
 - vii. Dealing of matters related to appeals, RTIs, court cases, etc. pertaining to the Sectt;
 - viii. Formulating draft guidelines for technical data generation and prescribing data requirement for registration of insecticides;
 - ix. Rendering advice on technical matters to Central and State Governments as well as pesticide Industry;
 - x. Amendments to the Act as well as the Rules;

- xi. Review of insecticides for restricting, banning or continued use; and
- xii. Organizing Central Insecticides Board Meetings for deciding policy issues and Registration Committee meetings for grant of registrations, endorsements and import permits.

Xiii Rendering advice on technical matters to the Designated National Authority for international conventions.

The main components of the Central Insecticides Board & Registration committee (CIB&RC)

The component deals with the implementation of the Insecticides Act, 1968, which provides for inclusion of a substance in the Schedule to the Act, so as to qualify to be an insecticide (pesticide). Substances in the Schedule to the Act are included by the Central Government on the recommendation of the Central Insecticides Board (CIB). Registration of pesticides is mandatory, by every person desirous of importing or manufacturing them, under Section 9 of the Act, by a Registration Committee (RC), constituted under Section 5, to ensure their efficacy and safety to human beings, animals and environment. A Secretariat for the CIB and the RC has been established under Section 8 of the Act, to examine the applications as per the guidelines of the RC framed under Section 5(5), besides allied correspondence and other work. The registration of safe and efficacious insecticides for the control of pests of agricultural crops, in public health and households as also to ensure the implementation of various provisions of the Act at the Central and State levels. Sectt. of CIB&RC was established with limited manpower in 1971 soon after the framing of the Rules. India initially used to import pesticides. Today, it is a hub of manufacturing of pesticides, though certain pesticides are imported too. In the last 12th FYP a total of 78158 Certificates of Registration have been issued / approved by the Registration Committee in various category. The category wise certificates of registration issued/ approved are as below:-

a.) Export	4752
b.) Chemical pesticides u/s 9 (3)	287
c.) Chemical pesticides u/s 9 (4) (TIM)	581
d.) Chemical pesticides u/s 9 (4) (FIM) & others	70644
c.) Bio-pesticides	1894

Techno-Legal Cell

Techno-Legal Cell is a component under Implementation of The Insecticides Act, 1968, which is a sub component of the Central Scheme “Strengthening and Modernization of Pest Management Approach in India” (SMPMA) under Sub Mission on Plant Protection and Plant Quarantine (SMPPQ) under Green Revolution (Krishonnati Yojana)

The main objectives of Techno-legal Cell are:

1. To make concerted efforts to ensure timely availability of quality pesticides to the farming community by ensuring effective implementation of the provisions of The Insecticide Act, 1968.
2. To co-ordinate between two Regional Pesticides Testing Laboratories (RPTLs) located at Chandigarh and Kanpur, established by the Central Government to supplement the resources of States/UT in monitoring quality of pesticides, where either State Pesticides Testing Laboratories (SPTLs) do not exist or where facilities for testing of all types of pesticides do not exist and co-ordination between RPTLs and Directorate for technical and administrative matters.
3. To co-ordinate between States and DAC& FW for various purposes, like grant-in-aid to the states and UTs for setting up of new State Pesticides Testing laboratories (SPTLs) and strengthening of existing SPTLs and Bio-pesticides Testing laboratories in the States. To facilitate NABL accreditation of the laboratories in the states.
4. To extend technical and legal expertise to SPTLs, RPTLs in the work related to analysis of pesticides and Insecticide Inspectors of State and Central Insecticide Inspectors starting from drawl of samples up to launching of prosecution in case of misbranded samples/ illegal import etc.

The following are the details of the activities proposed to be undertaken:

1. Grants-in-Aid to the States for Establishment and Strengthening of Pesticide and Bio Pesticide testing Laboratory:

At present, there are 69 State Pesticide Testing laboratories (SPTLs). As per the Insecticides Act, 1968, ensuring quality of pesticides is a shared responsibility between Centre and State Government. As the complaints on manufacturing and selling of sub-standard/spurious pesticides are on rise. Therefore, to check quality of chemical and Bio-pesticides, financial assistance will be provided to the States and UTs to establish and strengthening of Chemical and bio-pesticide Testing laboratories in the States. The grant-in aid as mentioned at **Annexure-III** and **Annexure-**

IV may be provided to the states and UTs for setting up of new Laboratories and strengthening of chemical and Bio-pesticide Testing laboratories, respectively.

2. Grant-in-Aid to the States for residual analysis/ detection of lacing of chemical pesticides in Bio-pesticides/Bio-products and investigational purpose:

Complaints regarding selling of Bio-pesticide /Bio-products/ Herbal product laced with chemical pesticides have been increased, considerably in the recent past, which has put the human health and environment at stake. Therefore, to check the lacing of chemical pesticides in Bio-products/Bio-pesticides/herbal products and investigation of sample of pesticides drawn from imported consignments, grant-in-aid as mentioned at **Annexure-V** will be provided to States for construction and procurement of equipments for residual analysis/ detection of lacing of chemical pesticides in Bio-pesticides/Bio-products and investigational purpose.

3. Strengthening of Existing Regional Pesticides Testing laboratories and Establishment of 2 New Regional Pesticides Testing laboratories at Hyderabad and Nashik:

Regional Pesticides Testing laboratories are established with an aim to assist the State Government in ensuring pesticides quality. At present there are two RPTLs at Kanpur and Chandigarh, which has a combined capacity of 3100 samples. The State which does not have functional Pesticide testing laboratory sent their sample to these RPTLs for analysis. Many State Governments do not adequate facilities for ensuring quality testing. Further, complaint on import of substandard /spurious pesticides are on rise and there is a need to check the quality of samples of pesticides drawn from imported consignment

Therefore, it is pertinent that quality mechanism be strengthened. In light of the above mentioned facts, establishment of two RPTLs at Nasik and Hyderabad and strengthening of the existing RPTLs will be done. The list of equipment for the existing and proposed RPTLs is at **Annexure VI**.

4. Establishment of Bio-Pesticides Testing Laboratories at Regional CIPMCs and two RPTLs:

CIPMCs plays an important and integral medium to facilitate dissemination of pest management information between Central and State Governments. Over the years, there has been an increase in use of Bio-Pesticides. These bio-pesticides are environmental friendly and does not poses threat to human health. However, quality of pesticides is need to be checked. With an aim to bring convergence, existing structure of CIPMCs may be utilized for testing of Bio-Pesticides.

Therefore, Bio-Pesticides Testing Laboratories be established at Six regional CIPMCs (Faridabad, Nagpur, Guhawati, Kolkata, Lucknow and Bangalore) and two RPTLs (Kanpur and Chandigarh). The details of the equipment are at **Annexure VII**.

5. Creation State of the Art Laboratory:

In order to bolster the pest management strategies, it is proposed that State of the Art Laboratories to be established in every States of the Country. These will function as ‘one Stop’ laboratory which will includes the following laboratories:

a) Pesticides Testing Laboratory. The Details of the equipment is at **Annexure-III**

Bio-Pesticides Testing Laboratory. The Details of the equipment is at **Annexure IV**

b) Pesticides Residue Analysis Laboratory. The Details of the equipment is at

Annexure V

c) Pest Diagnosis Laboratory

d) Bio-Control Agents Production Laboratory.

It is also proposed that apart from the basic equipment as mentioned above, an amount of Rs. 10.00 Crore will be provided to the State for the construction of the State of the Art Laboratory which will house the five above mentioned laboratories. Recurring expenses will be met by the concerned State.

6. **Creation of Task Force:** An exclusive task force comprising officers of the Directorate, which will exclusively work for checking illegal import, manufacturing and trading/distribution of pesticides in the country will be created.

7. **Creation of Post:** A total of 108 posts have been proposed for the above mentioned activities namely, establishment of two RPTLs, establishment of Bio Pesticide testing laboratory at Six Regional CIPMCs and creation of task force.

Annexure-III**Grant-in-Aid to States for Establishment/Strengthening of State Pesticide testing Laboratory (SPTL)**

1. Rs 80 lakh for construction of SPTL
2. Rs. 82 Lakh for equipments of SPTL

Details of Equipment to be supplied to SPTLs for quality control of pesticides are as under:-

S. No.	Name of Equipment	Cost (Rs. in lakh)
1.	HPLC	30.00
2.	GLC	25.00
3.	FTIR	15.00
4.	UV Visible Spectrophotometer	10.00
5.	Electronic Balance	2.00
	Total	82.00

Annexure-IV**Grant-in-Aid to States for Strengthening Equipment required for State Bio-Pesticide Testing Laboratories (SBPTLs)**

S. No.	Equipment	No.	Cost (Rs. In Lakh)
1.	ELISA (Enzyme-linked immuno sorbent assay) complete unit	1	11.00
2.	Fluorescent Microscope with phase contrast attachment	1	12.00
3.	Miscellaneous equipment	1	2.00
	TOTAL	--	25.00

Annexure-V

Equipment to be provided to SPTLS for residual analysis/ detection of lacing of chemical pesticides in Bio-pesticides/Bio-products and investigational purpose

Rs. 80 lakh for construction of Pesticide Residue/ investigational laboratory

S. No.	Name of Equipment	Cost (Rs. in lakh)
1	LC-MS/MS	150.00
2	GC-MS/MS	100.00
3	Miscellaneous	25.00
	Total	275.00

Annexure-VI

Equipment for existing Regional Pesticides Testing Laboratories at Chandigarh and Kanpur

S. No.	Name of Equipment	RPTL, Chandigarh	RPTL, Kanpur	Cost (Rs. in lakh)
1.	LC-MS/MS	1	1	300.00
2.	GC-MS/MS	1	1	200.00
3.	GLC	1	1	50.00
4.	HPLC	1	1	60.00
5.	UV-VIS Spectrometer	1	1	20.00
6.	FTIR	1	1	30.00
7.	Electronic Balance	1	1	4.00
8.	Miscellaneous items	-	-	50.00
	Total			714.00

**Equipment for Newly proposed Regional Pesticide Testing Laboratories at Nasik and
Hyderabad**

S. No.	Name of Equipment	No of Instruments required	Cost (Rs. in lakh)
1.	LC-MS/MS	2	300.00
2.	GC-MS/MS	2	200.00
3.	GLC	2	50.00
4.	HPLC	2	60.00
5.	UV-VIS Spectrometer	2	20.00
6.	FTIR	2	30.00
7.	Electronic Balance	2	4.00
8.	Miscellaneous items	-	50.00
	Total		714.00

Annexure-VII

Equipment required for Bio-pesticide testing for RPTLs and CIPMCs

S. No.	Equipment	No.	Approximate Cost (Rs. In Lakh)
1.	Laminar flow	1	01.20
2.	BOD Incubator	1	01.20
3.	Hot Air Oven	1	00.25
4.	Autoclave	1	00.50
5.	Moisture Analyzer	1	00.70
6.	Haemocytometer	1	00.40
7.	Aerosol Disinfectant	1	00.25
8.	ELISA (Enzyme-linked immune sorbent assay) complete unit	1	10.00
9.	PCR (Polymerase Chain Reaction) Complete Unit	1	12.00

10.	Compound Microscope (Research)	1	02.50
11.	Fluorescent Microscope with phase contrast attachment	1	10.00
12.	Centrifuge (20,000 rpm)	1	01.20
13.	Micropipette (different range) 0.01 µml-1ml	--	01.20
14.	Miscellaneous items	--	02.00
15.	Portable digital pH meter	-	0.70
	TOTAL	--	44.10

Sub Mission on Plant Protection and Plant Quarantine (SMPPQ)

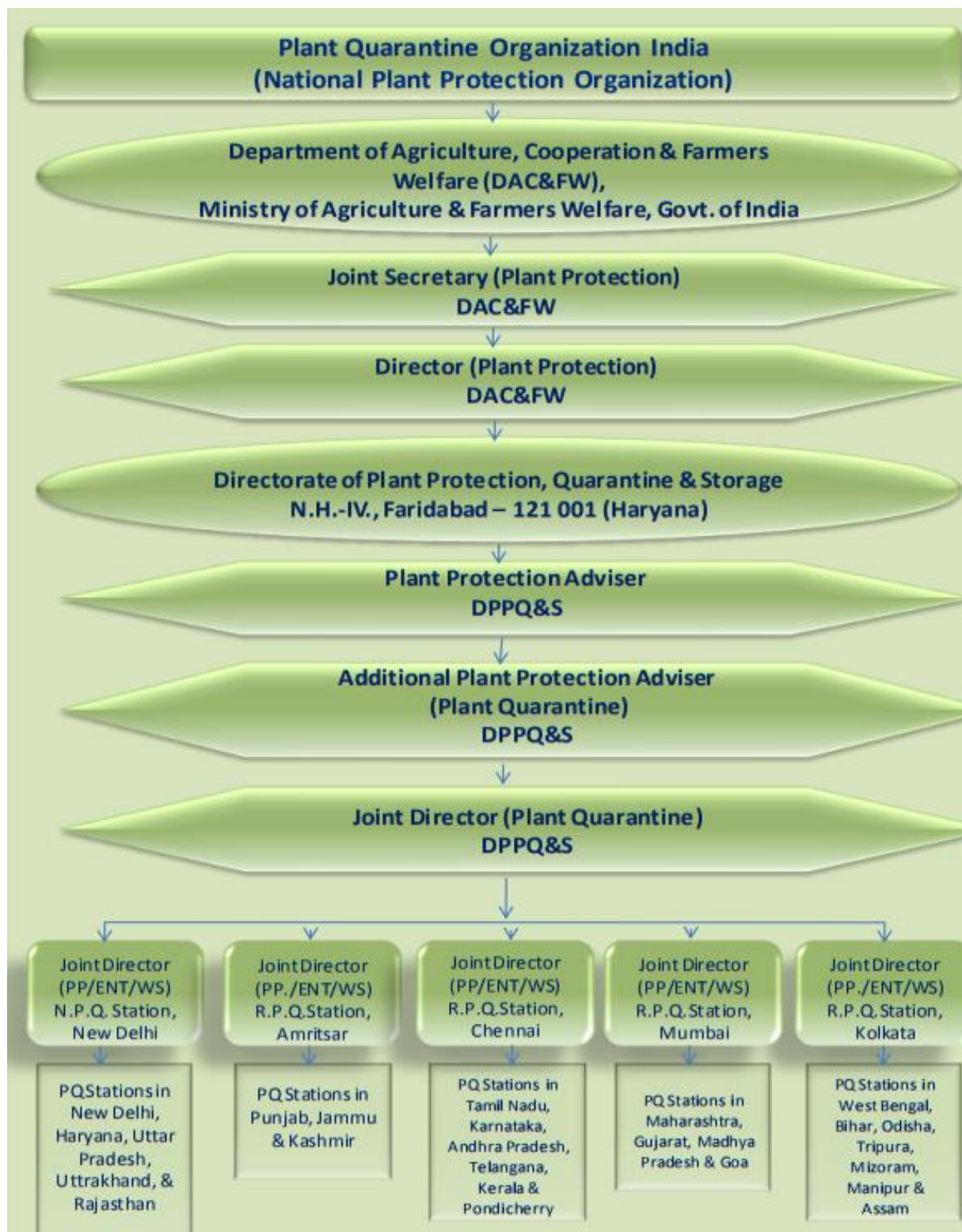
Plant Quarantine

Plant Quarantine (PQ) regulatory measures in India are operated under “the Destructive Insects & Pests Act, 1914” & “Plant Quarantine (Regulation of Import into India) Order, 2003”.

1. **Mandates:** To prevent the entry, establishment and spread of exotic pests in India as per the provisions of the **Destructive Insects & Pests Act, 1914** and the notifications issued there under.
2. **Objectives:**
 - i. Inspection of imported agricultural commodities for preventing the introduction of exotic pests and diseases inimical to Indian fauna and flora through implementation of DIP Act, 1914 and the Plant Quarantine (Regulation of Import into India) Order, 2003 issued there under.
 - ii. Inspection of plants and plant material meant for export as per the requirements under International Plant Protection Convention (IPPC) 1951 of FAO to facilitate pest free trade.
 - iii. Detection of exotic pests and diseases for their containment by adopting domestic quarantine regulations, if introduced.
3. **The ongoing activities assigned under the scheme:**
 - i. To undertake quarantine inspection and laboratory testing of IMPORTED plants and plant material to ensure freedom from exotic pests.
 - ii. To undertake phytosanitary certification (for issuance of Phytosanitary Certificates (PSCs); 183 Nos. of Officers from Central/ State/ UT Governments have been authorized for this purpose.
 - iii. To undertake fumigation/disinfestations/disinfections of commodities to control infestation/infection.
 - iv. To undertake certification of post-entry quarantine facilities and inspection of imported growing plants and plant material; 41 Nos. of Inspection Authorities have been designated.
 - v. To support Export market access for India’s Agriculture products from the phytosanitary point of view.

- vi. To facilitate safe global trade in agriculture by assisting the producers and exporters by providing a technically competent and reliable phytosanitary certificate system to meet the requirements of trading partners.
- vii. To provide Grants-in-aid to Designated Inspection Authorities to meet the travel expenses and also to State PSC issuing authorities for equipping them with minimal equipments required for export inspection/certification.
- viii. Granting approval/accreditation of Treatment providers in line with the requirement of ISPM-15.
- ix. To undertake Pest Risk Analysis (PRA) of different agricultural commodities with respect to their import or export in relation to the countries concerned.

4. Organization Chart



5. **Regulations/ Standard Operating Procedures/ National Standards for Phytosanitary Measures (NSPMs)**

- a. Destructive Insect Pest Act, 1914
- b. Plant Quarantine (Regulation of Import into India) Order, 2003

6. Standard Operating Procedures (SOP)

- i. [SOP for export of Peanuts](#)
- ii. [SOP for export of Dried chilli](#)
- iii. [SOP for Export of Rice to China](#)
- iv. [SOP for Export of Rice to USA](#)
- v. [SOP for PQ Import Inspection & Clearance](#)
- vi. [SOP on export inspection and certification of Vegetables & Fruits exported to EU Countries](#)
- vii. [SOP for Export Inspection and Phytosanitary Certification of plants / plant products and other regulated articles](#)
- viii. [SOP for Post Entry Quarantine Inspection](#)

7. National Standards for Phytosanitary Measures (NSPMs)

- NSPM 1 Plant Quarantine Operation Systems Manual
- NSPM 2 Import Inspection Manual
- NSPM 3 Export Inspection Manual
- NSPM 4 Post-Entry Quarantine Inspection Manual
- NSPM 5 [Pest Risk Analysis: Administrative Process Manual](#)
- NSPM 6 Pest Risk Analysis-Technical Methodology
- NSPM 7 [Guidelines for Reporting Plant Quarantine Activities](#)
- NSPM 8 [Guidelines for Auditing of Plant Quarantine Activities](#)
- NSPM 9 [Guidelines for Certification of Forced Hot-Air Treatment Facilities for Wood Packaging Material](#)
- NSPM 10 [Guidelines for Export Inspection & Phytosanitary Certification of Fresh Mango \(*Mangifera indica*\) Fruits to P. R. China](#)
- NSPM 11 [Quarantine Treatments and Application Procedures-1. Methyl Bromide Fumigation](#)
- NSPM 12 [Guidelines for Assessment, Accreditation & Auditing of Fumigation Agencies](#)
- NSPM 13 [Requirements for establishment of pest free areas for mango nut weevil \(*Sternochetus mangiferae*\) and pulp weevil \(*Sternochetus frigidus*\)](#)

- NSPM 14 [Requirements for Establishment of pest free areas for Tephritid fruit flies](#)
- NSPM 15 [Guidelines for Certification of Hot-Water Immersion Treatment Facilities](#)
- NSPM 16 [Guidelines for development of National Standards for Phytosanitary Measures](#)
- NSPM 17 [Guidelines for Regulating Export, Import & Release of Biological Control Agents & other Beneficial Organisms](#)
- NSPM 18 [Guidelines for Certification of Heat Treatment Facilities for Niger Seed](#)
- NSPM 19 [Requirements for establishment of pest free areas for brown rot \(*Ralstonia solanacearum*\) of potato](#)
- [NSPM 20 Guidelines for Certification of Vapour Heat Treatment facilities for fresh fruits](#)
- [NSPM 21 Guidelines for Certification of Irradiation Treatment Facilities for Fresh Fruits](#)
- [NSPM 22 Guidelines for Assessment, Audit and Accreditation of Fumigation Agencies for Undertaking Aluminium Phosphide Fumigation.](#)

8. Brief of Procedure and important services

A. Issuance of import Permit

1. For Soil in any form for research purpose; growing media (with soil, peat or other organic materials), peat or sphagnum moss for horticultural purposes.

Procedure

- The application or online application shall be made to the Issuing Authority as listed in Schedule-X of PQ Order, 2003 at least 10 days in advance, in PQ Form 06.
- A fee of Rs. 1000/- shall be payable along with the application. The fee shall be payable online.
- The Competent Authority may, after scrutiny of the application, and if satisfied of the purpose **issue special permit in Form PQ 07.**

2. For import of Germplasm, Transgenic or Genetically Modified Organisms

Procedure:

- Application for import permit of plant germplasm/ transgenics/genetically modified organisms for research/ experimental purpose shall be made to the Director, National Bureau of Plant Genetic Resources, New Delhi in form PQ 08
- The Competent Authority may, after scrutiny of the application, and if satisfied import permit shall be issued in form PQ 09 in triplicate and a red/green tag in PQ 10 for germplasm and a Red/ White tag in PQ 11 for transgenic/Genetically Modified Organisms.

3. For live insects and other arthropods/nematodes/microbial cultures including algae/bio-control agents

Procedure

- Application or online application for permit to import live insects and other arthropods/ nematodes/ microbial cultures including algae/ bio-control agents, shall be made in the PQ Form 12 at least thirty days in advance to Plant Protection Adviser along with a fee of Rs. 1000/-
- The competent authority shall issue the permit in PQ Form 13 in triplicate, if satisfied.

B. Issuance of Import Release Order

Documents required: Original phytosanitary certificate, Bill of lading/ air way bill, Bill of entry

Procedure

- After import of plant & plant products importer has to apply online at Plant Quarantine Information System (PQIS) website <http://plantquarantineindia.nic.in> for import release order alongwith inspection fee and submit documents to the concerned PQ Station.
- On receipt of application, PQ official scrutinized application and if found as per PQ Order, 2003, inspector will be deputed for inspection
- PQ inspector inspects the consignment as per SOP for import inspection & clearance & submit report alongwith representative sample to duty officer
- Based on inspection report & laboratory testing of sample, if found free from infestation/ infestation, release order is issued online and is communicated electronically to the Customs.
- If found infested, consignments are released after disinfection/ disinfection treatment if feasible otherwise deportation/ destruction order is issued.
- In case of imported planting materials require post entry quarantine, provisional release order is issued at PEQ facility approved by the Inspection Authority given in PQ Order, 2003.
- If consignment is imported in violation of PQ Order, 2003, deportation/ destruction order is being issued or dealt under relaxation clause 9 of PQ Order, 2003.

Time frame for issuance of release order:

- a. Tissue culture and mushroom - 4-6 hrs
- b. Spawn culture - 4-6 hrs;
- c. Cut flowers and fresh fruits - 4-6 hrs;
- d. Plant material for consumption, 1-2 working days except those requiring fumigation will be issued after 3 working days.

- e. Plants and planting material requiring Post Entry Quarantine, viz., Bulbs/ Tubers/ Cuttings/ Saplings/ Bud wood etc.; varies as per PEQ fulfillment of conditions.
- f. Seeds for sowing - 8-10 days (where fungal and bacterial additional declaration is to be verified); 30-35 days (where addition declaration for viruses is to be verified).

C. Issuance of Phytosanitary Certification (PSC)

Documents required: Invoice

- Exporter has to apply online at Plant Quarantine Information System (PQIS) website <http://plantquarantineindia.nic.in> for phytosanitary certificate alongwith inspection fee and submit documents to the concerned PQ Station.
- On receipt of application, PQ official scrutinized application and if found in order, inspector will be deputed for inspection and treatment supervision as applicable.
- PQ inspector inspects the consignment as per related SOP & requirement of importing country and supervise treatment as applicable and submit report alongwith representative sample to duty officer.
- Based on inspection report & laboratory testing of sample, if found free from infestation/ infestation, phytosanitary certificate is issued.
- If found infested, PSC is issued after disinfestation/ disinfection treatment if feasible & effective otherwise rejected.

Time frame:

- a. Sowing/propagating materials : Minimum of 8-10 days
- b. Perishable commodities such as nursery plants, tissue cultures, fresh fruits, cut flowers *etc.*, : 24-48 hrs.
- c. Plant material for consumption: 1-2 working days except those requiring fumigation will be issued after 3 working days.

D. Issuance of accreditation certificate/ Certification of warehouses/ packhouses

1. For Forced Hot-Air Treatment (FHAT) facility.

Related Guideline: NSPM-9

Procedure:

- Applications for registration should be submitted in prescribed format as given in NSPM 9 to the Officer In-charge of respective RPQS alongwith fee of Rs. 25,000/- & documents mentioned in NSPM 9.

- After scrutiny of application, two officers are nominated for inspection of FHAT facility.
- Nominated officials visit facility and conduct performance test of the facility and also assess the competency of operator and submit report to the respective RPQS alongwith recommendation.
- Officer In-charge if satisfied forward the recommendation of assessment team to the Headquarters for necessary approval of certificate from Plant Protection Adviser.
- Plant Protection Adviser grant certification of the FHAT facility as per NSPM 9 for two years if satisfied.

Renewal of Accreditation Certificate: Same process is followed for renewal of Certificate as mentioned above. Renewal certificate is issued by the In-charge of RPQS instead of PPA.

2. Accreditation of Fumigation Agency for undertaking MBr fumigation

Related Guidelines: NSPM-12

Procedure:

- Applications for registration should be submitted in prescribed format as given in NSPM 12 to the officer In-charge of respective RPQS alongwith Fee of Rs. 25,000/- & documents mentioned in NSPM 12.
- After scrutiny of application, two eligible officers are nominated for audit of agency & operator.
- Nominated officials conduct audit of the agency and also assess the competency of operator and submit report to the respective RPQS alongwith recommendation.
- Officer In-charge if satisfied forward the recommendation of assessment team to the Headquarters for necessary approval of accreditation from Plant Protection Adviser.
- Plant Protection Adviser grant accreditation of the fumigation agency & operator as per NSPM 12 for two years if satisfied.

Renewal of Accreditation Certificate: Same process is followed for renewal of Certificate as mentioned above. Renewal certificate is issued by the In-charge of RPQS instead of PPA.

3. For Aluminium Phosphide Fumigation Treatment Providers

Related Guideline: NSPM-22

Procedure:

- Applications for registration should be submitted in prescribed format as given in NSPM 12 to the officer In-charge of respective RPQS alongwith Fee of Rs. 25,000/- & documents mentioned in NSPM 22.
- After scrutiny of application, two officers are nominated for audit of agency & operator.

- Nominated officials conduct audit of the agency and also assess the competency of operator and submit report to the respective RPQS alongwith recommendation.
- Officer In-charge if satisfied forward the recommendation of assessment team to the Headquarters for necessary approval of accreditation from Plant Protection Adviser.
- Plant Protection Adviser grant accreditation of the fumigation agency & operator as per NSPM 12 for two years if satisfied.

Renewal of Accreditation Certificate: Same process is followed for renewal of Certificate as mentioned above. Renewal certificate is issued by the In-charge of RPQS instead of PPA.

4. For Vapour Heat Treatment (VHT) Facility

Related Guidelines: NSPM-20

- Applications for registration should be submitted in prescribed format as given in NSPM 12 to the PPA alongwith Fee of Rs. 2,000/- & documents mentioned in NSPM 20.
- After scrutiny of application, two officers are nominated for inspection and audit of VHT facility.
- Nominated officials conduct performance test and submit report to the PPA alongwith recommendation.
- Plant Protection Adviser grant accreditation of the VHT facility as per NSPM 20 for one year if satisfied.

Renewal of Accreditation Certificate: Same process as mentioned above is followed for renewal of Certificate except Fee of Rs. 1000/-

5. For Hot Water Immersion Treatment (HWIT) Facility

Related Guidelines: NSPM-15

- Applications for registration should be submitted in prescribed format as given in NSPM 12 to the PPA alongwith Fee of Rs. 2,000/- & documents mentioned in NSPM 15.
- After scrutiny of application, two officers are nominated for inspection and audit of HWIT facility.
- Nominated officials conduct performance test and submit report to the PPA alongwith recommendation.
- Plant Protection Adviser grant accreditation of the HWIT facility as per NSPM 20 for one year if satisfied.

Renewal of Accreditation Certificate: Same process as mentioned above is followed for renewal of Certificate except Fee of Rs. 1000/-

6. For Peanut Processing Unit

Related Guidelines: SOP for export of peanuts

- Applications for registration should be submitted in prescribed format as given in SOP to the PPA alongwith Fee of Rs. 5,000/- & documents mentioned in SOP.
- After scrutiny of application, one officer is nominated for joint inspection and audit of facility alongwith APEDA.
- Nominated officials from DPPQ&S and APEDA conduct audit of the facility and submit report to the PPA alongwith recommendation.
- Plant Protection Adviser grant certification of peanut processing unit as per SOP for one year if satisfied.

Renewal of Accreditation Certificate: Same process as mentioned above is followed for renewal of Certificate except Fee of Rs. 2000/-

7. For Chilli Processing Unit**Related Guidelines:** SOP for export of Dried chilli

- Applications for registration should be submitted in prescribed format as given in SOP to the Regional PQS along with Fee of Rs. 5,000/- & documents mentioned in SOP.
- After scrutiny of application, one officer is nominated for joint inspection and audit of facility alongwith Spices Board.
- Nominated officials from DPPQ&S and Spices Board conduct audit of the facility and submit report to the PPA alongwith recommendation.
- Plant Protection Adviser grant certification of chilli processing unit as per SOP for one year if satisfied.

Renewal of Accreditation Certificate: Same process as mentioned above is followed for renewal of Certificate except Fee of Rs. 2000/-

8. For Rice Processing Unit**Related Guidelines:** SOP for Export of Rice to USA & SOP for Export of Rice to China

- Applications for registration should be submitted in prescribed format as given in SOP to the PPA alongwith Fee of Rs. 5,000/- & documents mentioned in SOP.
- After scrutiny of application, one officer is nominated for joint inspection and audit of facility alongwith APEDA.
- Nominated officials from DPPQ&S and APEDA conduct audit of the facility and submit report to the PPA alongwith recommendation.

- Plant Protection Adviser grant certification of Rice processing unit as per SOP for one years if satisfied.

Renewal of Accreditation Certificate: Same process as mentioned above is followed for renewal of Certificate except Fee of Rs. 2000/-