

September 2015



منظمة الأغذية
والزراعة
للأمم المتحدة

联合国
粮食及
农业组织

Food
and
Agriculture
Organization
of
the
United
Nations

Organisation
des
Nations
Unies
pour
l'alimentation
et
l'agriculture

Organización
de las
Naciones
Unidas
para la
Agricultura
y la
Alimentación

ASIA AND PACIFIC PLANT PROTECTION COMMISSION

TWENTY-NINTH SESSION OF THE ASIA AND PACIFIC PLANT
PROTECTION COMMISSION (APPPC)

Bali, Republic of Indonesia, 7 - 11 September 2015

AGENDA NO. 3

Country report

India

Country Report - India

General Information

Plant Protection is vital to reduce loss to crops production in a sustainable and eco-friendly manner. Thus the major thrust is on the promotion of Integrated Pest management, availability of safe and quality pesticides, streamlining the quarantine measures to eliminate possibilities of entry of exotic pests and human resource development in plant protection skills.

India has adopted Integrated Pest Management (IPM) approach as the cardinal principle of plant protection in the crop production programmes in the country. IPM has been recognized as an important component in the National Agriculture Policy of the Government of India. The objectives of IPM approach are to increase crop production with minimum input costs, minimize environmental pollution and maintain ecological equilibrium. A total 31 Central Integrated Pest Management Centers have been set up for this purpose.

India also needs to maintain constant vigil on locust activities in the Scheduled Desert Area of 200,000 sq. km keeping in view the locust invasions of 1993 and 1997.

Quality control of pesticides is accorded high priority to ensure that the agro-chemicals used for pest management have the requisite efficacy. The Central Insecticide Laboratory functions as the National Referral Laboratory, while the Regional Pesticides Testing Laboratories, at Chandigarh and Kanpur supplement the resources of state /UT Governments in the analysis of pesticides samples.

A. PLANT QUARANTINE

Plant Quarantine regulatory measures emanate from the “**Destructive Insects & Pests Act, 1914**”. The purpose and intent of this act is to prevent the introduction of pests/diseases into India and their transportation from one State to another. The Directorate of Plant Protection, Quarantine & Storage was established under Ministry of Agriculture & Farmers Welfare (Department of Agriculture & Cooperation) in 1946 and is entrusted with the implementation of Plant Quarantine Regulations. Ministry of Agriculture & Farmers Welfare issued a notification “The Plant Quarantine (Regulation of Import into India) order 2003”, which is being enforced since 01.01.2004 and amended from time to time. The number of Plant Quarantine Stations is being enhanced and strengthened for better regulation and improved ease of doing business. Plant Quarantine and Phytosanitary officials also carry out Pest Risk Analysis (PRA) and Post Entry Quarantine (PEQ) surveillance.

The Sanitary and Phytosanitary Agreement of WTO envisages application of Phytosanitary measures on scientific basis and as such India has aligned its regulations, standards and Plant Quarantine inspections norms as per the International Standards/guidelines. The National Standards for Phytosanitary Measures (22 nos.) are in consonance with the ISPMs. The Standards which are critical for exports have been prioritized. To streamline Plant Quarantine activities, efforts have been made to fully

computerize and the Plant Quarantine Stations network through the web based Plant Quarantine Information System (PQIS) to provide transparent online plant quarantine services. Government of India has initiated Single Window system which aims at seamless integration of the PQIS with Customs EDI system.

Inspection of agricultural commodities meant for export is done as per the requirements of importing countries under International Plant Protection Convention (IPPC) 1951 of FAO. Phytosanitary Certificates are issued as per revised text of IPPC and the model certificate prescribed there under. All export of agricultural commodities for propagation, consumption and processing are inspected and certified as per relevant ISPMs, NSPMs and the importing country requirements. Laboratories have been strengthened and modernized by including advanced equipments for detection of pathogens.

1. Reorganized National Plant Protection Organization (NPPO) and Plant Quarantine network

There is no change in the NPPO structure. The Plant Quarantine Order, 2003 has already been notified by the Ministry to regulate import of plants and plant products including germplasm, bulk import of food grains, live insects and fungi as well as bio-control agents, etc. Amendment in PQ Order, 2003 is regularly done to facilitate trade and to meet with Biosecurity risks and challenges. There are special provisions for regulating GMO plant/food products and import of timber including soft wood packing material. There are 57 notified PQ Stations in the country.

2. Status and implementation of National/International Standard for Phytosanitary Measures

The development of standards whether national, international or regional are of paramount importance for global harmonization of Phytosanitary measures. Accordingly, twenty two National Standards in line with International Standards on Phytosanitary Measures have been developed by Government of India, and are being implemented effectively. Also, Regional and International Standards are implemented wherever required as a default option.

3. Accessibility to the internet and Web based availability of Phytosanitary information:

With a view to disseminate information on plant quarantine regulations, procedures and practices, a website "<http://www.plantquarantineindia.nic.in>" has been designed and hosted on the web.

All the Plant Quarantine Stations dealing with Phytosanitary issues have been linked through PQIS (Plant Quarantine Information System) for smooth and transparent functioning of Plant Quarantine related work. Also, a National e-Governance Plan in Agriculture (NeGP-A) with the help of National Institute for Smart Government (NISG) is in progress to further improve the system.

4. ISO Certification of Plant Quarantine Stations

There are 5 major Plant Quarantine Stations viz; the National Plant Quarantine Station, New Delhi, Regional Plant Quarantine stations, at Amritsar, Chennai, Mumbai and Kolkata, which are ISO certified, besides, the ones at Tuticorin, Cochin, Bongaon, Kandla, and Vishakhapatnam.

5. Progress for the establishment of Pest Free Areas of production and pest free production sites and other Projects

Survey and monitoring plan under National Integrated Fruit Fly Surveillance Project was initiated in 2006 to detect, monitor and control the incidence of *Bactrocera* species in the selected areas through the operation of a regular fruit fly trapping system and to ascertain whether mango is a host for various *Bactrocera* species. No pest free area was observed.

A project “Survey and Monitoring of Mango Nut Weevil (*Sternochetus mangiferae*) and Pulp Weevil (*Sternochetus frigidus*) in the states of Gujarat, Maharashtra and Uttar Pradesh had been initiated in October, 2005. The project was aimed to identify distribution of these pests in these States. Uttar Pradesh State of India has been found to be free from these pests.

The State Government of Punjab, has declared 15 (fifteen) districts as Pest Free Area (PFA) during 2007-08 for Brown rot (*Ralstonia solanaecarum*) and Ring rot *Clavibacter michiganensis*) of Potato.

6. Number of Phytosanitary certificates and import inspections in relation to the import/export of Agricultural commodities

During the period of 2014-15, a total of 40,426 nos. of import permits for agricultural commodities and 3,66,416 nos. Phytosanitary Certificates have been issued. The year-wise details of these activities can be seen at **Annexure-I**.

7. Effectiveness of the interception of quarantine pests

A number of pests have been intercepted in import consignments of which the major ones are *Ahasverus advena* on bamboo sticks and assorted products, *Cryptolestes ferrugineus* on betel nut, *Embellisia alli* on garlic, *Polygonum cuspidatum* in wheat. The detail list of interception during the years 2013-14 and 2014-15 is available in **Annexure II**.

8. Progress in Pest Risk Analysis

The Plant Quarantine (Regulation of Import into India) Order, 2003, stipulates that import of new commodity other than those listed in Schedules V, VI & VII of PQ Order, 2003 is permitted only after a thorough analysis of Pest Risk. The commodities that are prohibited under the PQ Order, 2003 are notified in the Schedule IV. There is a

concerted effort to improve the human resource capabilities in the area which inter alia include PRA and phytosanitary inspection and certification, etc.

B. PEST MANAGEMENT, SURVEILLANCE, PEST OUTBREAKS AND INVASIVE SPECIES MANAGEMENT

Adoption of modern agricultural technology comprising introduction of high yielding crop varieties, use of chemical fertilizers, assured irrigation and improved agronomic practices during late 1960s and 1970s has enabled the Indian farmers to increase crop production several folds. However, such an intensive cropping system has also paved the way for emergence of pests, diseases and weeds. Annual crop losses due to pests have been estimated at between 10-30%. To overcome serious pest outbreaks, farmers often choose to adopt prophylactic control measures, particularly application of chemical pesticides. Indiscriminate and injudicious use of pesticides in some cases has resulted in adverse effects viz., development of resistance in pests, resurgence in pests, pesticide residues in food, fodder, soil and water.

1. National Policy on IPM

Keeping in view the concern arising from harmful impact of chemical pesticides on the environment and recognizing the benefits of Integrated Pest Management (IPM) programme, the Minister of Agriculture, Govt. of India, made a policy statement in 1985 making IPM the cardinal principle and main plank of plant protection strategy in the overall crop production programmes in the country. Objectives of IPM approach is to maximize crop production with minimum input cost, minimize environmental pollution, maintain ecological equilibrium and minimize occupational health hazards due to chemical pesticides. Government of India, Department of Agriculture & Cooperation in the Union Ministry of Agriculture & Farmers Welfare is promoting IPM under the scheme “Strengthening and Modernization of Pest Management approach in India”, through 31 Central Integrated Pest Management Centers (CIPMCs) to supplement initiatives taken in this regard by State Governments.

The Government of India is also a signatory to the Agenda 21 of United Nations Conference on Environment and Development (UNCED) 1992, which has approved and accepted IPM as a tool to reduce the use of chemical pesticides in agriculture. The Govt. of India has taken a number of positive measures for the promotion of IPM among the farming community:

Policy Support:

- Financial assistance for promotion of IPM.
- Emphasize use of biocontrol agents, biopesticides, pheromones, etc.
- Easier registration of biopesticides.
- Phasing out, banning and restricting use of hazardous chemicals/pesticides.

2. Activities of CIPMCs

- Popularizing IPM approach among farming community.
- Conducting regular pest survey and monitoring pest/disease situation.
- Rearing of biological control agents/ biopesticides for their use and infield conservation of naturally occurring bioagents.
- Promotion of biopesticides including botanical pesticides as alternative to chemical pesticides.
- To play a catalytic role in spread of innovative IPM skills to extension workers and farmers.
- Human Resource Development in IPM by imparting training to extension workers of States/UTs Department of Agriculture/Horticulture and farmers through farmers field schools (FFSs).
- Human Resource Development programme - short duration courses of two to five days for pesticides dealers/NGOs/Graduates/Post-graduates/Pvt. entrepreneurs and progressive farmers.
- Season long Training programmes (SLTPs) on major agricultural/horticultural crops for extension workers of the State Department of Agriculture/Horticulture NGOs.

3. Organization of Farmers Field Schools (FFSs)

FFSs are being organized by each CIPMC in States for major agricultural and horticultural crops in pest prone areas. In each FFS 30 farmers and 5 extension officers of the State are given training on IPM knowledge and skills for consecutive 14 weeks. The main aim of FFS is to train the farmers so that they are able to take decisions in pest control operation and help extension officers to train farmers in IPM skills. In order to develop a of skilled manpower in IPM, Government of India has approved provision of 100% financial assistance for organization of FFSs by Krishi Vigyan Kendras (KVKs), State Agriculture Universities (SAUs) and Indian Council of Agricultural Research (ICAR) Institutions. The physical targets & achievements for last two years are enclosed in **Annexure-III**.

4. Establishment of State Bio-control Laboratories (SBCLs)

Keeping in view the eco-friendly nature of biocontrol agents/biopesticides in pest control, Govt. of India has provided grants-in-aid to States/UTs for establishment of 38 State Biocontrol Laboratories (SBCLs) for easy availability of these products to the farmers. Government of India has formulated guidelines for providing Grants-in-aid to NGOs for establishment of bio-control units to supplement the production of bio-control agents/bio-pesticides to meet the farmers demand.

5. Pest Surveillance/Monitoring

Pest surveillance and monitoring is one of the main activities of CIPMCs. CIPMCs conduct field surveys at regular intervals and advise farmers and state departments of Agriculture/Horticulture to adopt suitable IPM measures. The Department of agriculture & Cooperation (DAC) have been working on a three tier Pest Surveillance and Advisory system at National, State and District levels for effective data convergence and, appropriate and timely advisories to the farmers. In this regard, DAC has constituted National Pest Surveillance and Advisory Unit (NPSAU) at national level and suggested State Government to set up State Pest Surveillance and Advisory Unit (SPSAU) and District Pest Surveillance and Advisory Unit (DPSAU) at state and district level respectively.

6. Development of IPM Packages of Practices

Government of India has developed IPM Package of Practices for 77 major crops with technical inputs from the Indian Council of Agricultural Research, State Agricultural Universities (SAUs), State Departments of Agriculture and Horticulture (**Annexure-IV**) for use by farmers and extension functionaries. For easy access to the beneficiaries, these package of practices have been posted in the website <http://ppqs.gov.in>

7. Seed treatment Campaign

Government of India has launched a country wide campaign for ensuring 100% seed treatment in all important crops during last several years. State Departments of Agriculture/ Horticulture, Pesticide industry associations, Agriculture Technology Management Agencies, CIPMCs, KVKs, Farmers Clubs, SAUs, NGOs, etc. have played an important role in the campaign for 100% seed treatment in the country. As a result there is considerable increase in seed that is treated and sown by farmers. Efforts are made for giving preference to bio-control agents/products for treating the seeds before sowing or for storage purposes. The farmers are also being trained in the methods of seed treatment, post treatment- handling of seeds and planting materials.

8. Production and use of biocontrol agents and Bio-pesticides

Biological control is an important component of IPM where deliberate use of bioagents/bio-pesticides (predators, parasitoids and pathogens) are made in crops to maintain pest population at a level below that which may cause economic loss.

These biocontrol agents/biopesticides are being produced by CIPMCs in laboratories and released in the farmers' field free of cost. Important among bioagents are different species of *Trichogramma*, *Chrysoperla*, *Chelonus*, *Bracon*, *Coccinellids*, and among bio-pesticides different species of *Trichoderma*, Nuclear polyhedrosis virus (NPV), *Paecilomyces*, *Metarrhizium*, *Beauveria*, *Pseudomonas*, *Verticillium*, *Bacillus* are

notable ones. With a view to regulate manufacture, use and quality, these bio-pesticides have been brought under the purview of Insecticides Act, 1968.

9. Short duration Training Programmes on IPM

Short duration training programme viz. 2 days orientation programmes for pesticide dealers, NGOs, unemployed graduates; 5 days refresher courses for extension officers; 5 days trainings in mass production of bioagents / Biopesticides for farmers, NGOs, private entrepreneurs, etc. are being organized by CIPMCs.

10. Training facilities at NIPHM, Hyderabad

The National Institute of Plant Health Management (NIPM), Hyderabad is the sole institute of its kind in the country devoted to research, education and training in plant protection and management. It provides institutional training to master trainers about latest advances made in plant protection technology. Various international and national training programmes are being conducted by this institute every year on various facets of plant health management. The institute is responsible for providing induction and refresher trainings to officials of DPPQS to keep their knowledge and skill updated in plant protection. The institute also offers different diploma courses and has a well equipped laboratory.

11. Impact of IPM

Some studies in different crops in some States have shown that adoption of IPM programmes have led to salutary results -

- Increase of 6.72-40.14% in rice yields and 22.7-26.63% in cotton compared to non-IPM plots.
- Reduction in number of chemical pesticide sprays to the extent of 50-100% in rice and 29.62-50.50% in cotton.
- Vegetable IPM farmers have recorded net gain of Rs. 6200 to 22500 per hectare, increased yield from 5.9 to 25% and reduced chemical sprays 62.5 to 100% compared to Non-IPM fields.
- Increased awareness about the health and environmental benefits.
- At a macro level, this has also contributed in reduction in consumption of pesticides from 61, 357 MT (Tech. Grade) during 1994-95 to 56519.77 MT (Tech. Grade) during 2011-12.
- Adoption of IPM has increased consumption of Biopesticides/neem based pesticides from 123 MT during 1994-95 to 5203.66 during 2012-13.

C. DESERT LOCUST SITUATION

India continued to remain free from any gregarious phase of desert locust activity during the year 2012-13, 2013-14 and 2014-15. However, solitary desert locusts were observed at many places at densities ranging from 1-50 numbers per hectare in the Districts of Sriganganagar, Bikaner, Jaisalmer and Suratgarh in the state of Rajasthan. A close liaison was maintained throughout the year with FAO Rome, Regional and International agencies / organizations associated with locust control through exchange of fortnightly Locust Situation Bulletins / information.

Regular extensive survey and monitoring of locust population by Locust warning Organization over an area of about 2,00,000 sq. kms in the Desert has helped keep check on local breeding and invasion of locust. The Locust Warning Organization central Headquarter is at Faridabad and the field Headquarter is at Jodhpur. There are 10 locust circle offices and a Field station for investigation on locust (FSIL) at Bikaner in Rajasthan.

D. PESTICIDE MANAGEMENT

Changes/improvements in national strategy organization, legislation, regulations and registrations since 2011

Pesticides are one of the essential inputs in sustaining agricultural production. Since pesticides are meant to kill, they are inherently hazardous and therefore, regulated under a comprehensive legislation, namely, The Insecticides Act, 1968 (the Act) and The Insecticides Rules, 1971 (the Rules). The word 'Insecticide' has been defined to include the entire range of pesticides and PGRs.

The Act regulates the import, manufacture, sale, transport, distribution and use of insecticides with a view to prevent risk to human beings or animals. The Central Insecticides Board advises Central Government on technical matters arising out of administration of the Act. The Act requires mandatory registration of persons engaged in the business of import or manufacture of pesticides, which is done by a Committee, namely, the Registration Committee (RC). The RC registers pesticides after verifying the chemical formulae and satisfying itself with the efficacy and safety of products. Subsequent to registration, licensing for manufacture, sale, distribution etc. is granted by State Governments. Monitoring of quality of pesticides is the joint responsibility of the Central and State Governments. The legislation also provides for prohibition on import, manufacture, sale, etc. of pesticides under certain circumstances. There are provisions for administrative and legal actions against the offenders of the provisions of the Act.

Legislation on pesticides in India is more than four decades old and a new legislation 'The Pesticides Management Act' is now under consideration in the Parliament.

The criteria for registration of Bio-pesticides are for more relaxed as compared to chemical pesticides to help encourage their use.

Inclusion of new substances of chemical or biological origin in the Schedule to Insecticides Act, 1968 is a dynamic process. On inclusion in the Schedule, the substances or their preparations qualify to be termed as "Insecticides" as per the

definition under the Act. As on date, 841 substances have been included in the said Schedule of which 260 pesticides registered for use in the country.

Online registration certificate will be issued soon for certain categories of pesticides registrations.

1. National trends in the amount and composition of pesticides use

India has been steadily switching over from high volume pesticides to low volume high efficiency pesticides. A wide variety of pesticides formulations is registered in India. India has also banned certain pesticides on grounds of safety.

2. Status of management of obsolete pesticides

India has taken purposeful steps to dispose a large stockpile of obsolete and pesticides past their shelf life in conformity with the law of the land in approved Test, Storage and Destruction Facilities.

3. Pesticide Risk Reduction Initiatives and Progress

The Government has taken various steps to reduce/minimize the adverse effect of pesticides. Only those pesticides which are effective and safe to human health and environment are registered for use in the country. Further registered pesticides are regularly being reviewed. 26 pesticides/formulations for import, manufacture and use in the country have been banned from use in India. Besides 4 insecticides formulations have been banned for import, manufacture and use in the country. In addition, 2 other pesticide/insecticide formulations have been allowed manufacture for export only. Thirteen pesticides have been put under restriction. The list of banned, restricted and total number of registered pesticides are annexed.

The Registration Committee while registering the pesticides prescribes all relevant parameters including the dosage, time and method of application, precautions, instructions on the waiting period (pre-harvest interval) for safe and effective use of pesticides etc. Government is reviewing its labelling regulation to make it more effective and user friendly.

The Ministry of Agriculture & Farmers Welfare is implementing a Scheme to Monitor Pesticide Residues at National level in agricultural commodities etc. 25 laboratories in the country have been included in this network to carry out the monitoring exercise. The results show that about 3% of all samples contain residues above national MRLs.

4. Status of Ratification and Implementation of International Conventions on Pesticide Management (Rotterdam, Stockholm, Basel, Montreal) including

National Strategic Planning for Ratification and Implementation of the conventions

India has ratified and implemented decision of the Convention. Designated National Authority for Pesticide under Rotterdam Convention is Director (Plant Protection), Department of Agriculture & Cooperation, Ministry of Agriculture & Farmers Welfare, New Delhi.

Ministry of Environment and Forests, New Delhi is the nodal department for the Rotterdam, Stockholm, Basel, and Montreal Convention.

5. Status of the Implementation of International Code of Conduct on the Distribution and use of Pesticides (Country's responding to the FAO questionnaire on the observance of the Code could be referred)

The distribution and use of Pesticides is done by Ministry of Agriculture & Farmers Welfare as per FAO code of conduct.

Updated list of banned/prohibited

1. List of Pesticides Refused Registration- **Annexure-V**
2. List of Pesticides/Pesticides Formulations Banned in India- **Annexure-VI**
3. List of Pesticides Restricted in India- **Annexure-VII**

Updated list of banned/prohibited

1. List of Total Registered Pesticides-**Annexure-VIII**
6. **Regulatory control scheme in place for pesticides advertisements and incidents, if any, of deviation from the National Laws or related provision of the International Code of Conduct on distribution and use of pesticides.**

As per Section 26 of Insecticides Act 1968 the State/UTs are required to notify the functionaries for reporting the occurrences of pesticide poisoning cases. Almost all the States have notified such functionaries. These states monitor pesticides poisoning cases within their territories. Frequent training programme is conducted to make the farming community aware of the need for safe and judicious use of pesticides.

7. National Targets and Efforts with regard to Pesticide Risk Reduction in Food Safety

Efforts are made to minimize pesticide risks in food through the Food Safety and Standards Authority of India which also notifies Maximum Residue Limits on the basis of risk analysis.

8. Progress in Monitoring and management of pesticides residues in food and the environment

Monitoring of pesticide residues in food comes under the purview of Ministry of Health and Family Welfare under The Food Safety & Standards Act, 2006, while monitoring of pesticide residues in environment is the responsibility of Ministry of Environment and Forests under the Environment Act. In addition, the Department of Agriculture & Cooperation has initiated a Scheme for Monitoring Pesticide Residues in Crop commodities.

9. Development and application status of Biopesticides including Botanical Pesticides

Biopesticides of plant origin like, Neem, Cymbopogon, & Microbial pesticides like Bt., *Trichoderma*, *Beauveria*, *Pseudomonas*, *Paecilomyces*, NPV, *Verticillium*, etc. are being popularized. The Government has included these Biopesticides in the Schedule to the Insecticides Act, 1968 and simplified the guidelines for registration of Biopesticides; allowed commercialization under provisional registration; processing of applications for registration of Biopesticides on priority; and allowed sharing of data among registrants/ institutions. With these efforts, several Biopesticides have been registered under the Insecticides Act, 1968 for use in the country (**Annexure-IX**).

Achievement during 2014-15– Plant Quarantine

Activity		Unit	2013-14	2014-15
IMPORT	Import Permit issued	Nos.	36510	40,426
	Plant/ Plant material inspected & released	MTs. (in millions)	12.57	14.39
		Nos. (in millions)	57.07	57.26
EXPORT	Phytosanitary Certificates issued	Nos.	307524	366416
	Quantum of plants/Plant material certified	MTs. (in millions)	35.17	33.43
		Nos. (in millions)	71.16	128.79
Revenue Collected		Rs. (in millions)	1413.60	1752.03

Annexure-II**Interception of Quarantine Pest during 2013-14 and 2014-15**

Sl No.	Name of the commodity	Country of origin	Name of the Pathogen Intercepted	Category
RPQS, Amritsar				
2013-14				
1	Almond	USA	<i>Ephestia kuehniella</i>	Insect
2	Beech Logs	Germany	<i>Arion species</i>	slug
2014-15				
1	Wheat	Turkey	<i>Polygonum cuspidatum</i>	Weed
RPQS, Mumbai				
2013-14				
1.	Beech logs	Belgium	<i>Xyloborus affinis</i>	Insect
2.	Kakkar singhi, Cassia	China	<i>Ahasverus advena</i>	Insect
3.	Cassia	Vietnam	<i>Silvanoprus angusticolis</i>	Insect
4.	Dates	Pakistan	<i>Ephestia kuehniella</i>	Insect
5.	Cassia, Nutmeg, Betel nut	Pakistan, Vietnam, Sri Lanka	<i>Cryptolestes ferrugineus</i>	Insect
6.	Dates, Nutmeg	Pakistan, Sri Lanka	<i>Carpophilus hemipterus</i>	Insect
7.	Tagetes	USA	<i>Fusarium oxysporum sp.calliistephi</i>	Fungus
8.	Assorted seeds	Chile	<i>Pseudomonas syringae pv.maculicola</i>	Bacteria
9.	Beet root	New Zealand	<i>Polygonum cuspidatum</i>	Weed
2014-15				
1.	Assorted products	Vietnam	<i>Ahasverus advena</i>	Insect
2.	Bamboo sticks	Vietnam	<i>Cryptolestes ferrugineus</i>	Insect
3.	Betel nut	Vietnam	<i>Cryptolestes ferrugineus</i>	Insect
RPQS, Chennai				
2013-14				

1.	Almond plants	Thailand	<i>Pseudococcus calceolariae</i>	Insect
2.	Garlic – Bulb	China	<i>Embellisia allii</i>	Fungus
2014-15				
1	Garlic – Bulb	China	<i>Embellisia allii</i>	Fungus
RPQS, Kolkata				
2014-15				
1	Garlic – Bulb	China	<i>Embellisia allii</i>	Fungus
NPQS, New Delhi				
2014-15				
1	Garlic – Bulb	China	<i>Embellisia allii</i>	Fungus

The physical achievements during last two years- Integrated Pest Management

Parameters	Achievements	
	2013-14	2014-15
INTEGRATED PEST MANAGEMENT / Sample Rapid Roving Pest Survey (in thousand ha)	764.65	800.06
Parasites / Predators released (Millions)	1920.50	2000.11
a) Area Covered (Under Augmentation) (in thousand ha.)	76.86	76.87 749.28
b) Area covered (Under Conservation) (in thousand ha.)	659.15	
No. of FFS	616	641
No. of Farmers trained	18480	19230
2 days Programme	114	115
5 days Programme	13	17
SLTP (30 days)		04
1. No. of SLTP	4	
2. No. of AEOs Trained	160	160

LIST OF IPM PACKAGE OF PRACTICES

Cereal Crops

- | | |
|-----------------|------------|
| 1. Rice | 2. Wheat |
| 3. Maize | 4. Sorghum |
| 5. Pearl Millet | |

Pulse Crops

- | | |
|--------------|--------------------------|
| 6. Pigeonpea | 7. Black gram/green gram |
| 8. Gram | 9. Rajmah |
| 10. Pea | |

Oilseeds

- | | |
|----------------------|-------------|
| 11. Groundnut | 12. Soybean |
| 13. Rapeseed/Mustard | 14. Sesame |
| 15. Safflower | 16. Castor |
| 17. Sunflower | |

Vegetables

- | | |
|---------------------------|-------------------------------|
| 18. Potato | 19. Onion |
| 20. Tomato | 21. Cruciferous vegetables |
| 22. Leguminous vegetables | 23. Cucurbitaceous vegetables |
| 24. Brinjal | 25. Okra |
| 26. Chilies | 27. Jack fruit |
| 28. Spinach | 29. Broccoli |
| 30. Garlic | 31. Lablab bean |

Commercial Crops

- | | |
|----------------|-------------|
| | 32. Cotton |
| 33. Sugarcane | 34. Tobacco |
| 35. Betel vine | |

Fruit Crops

- | | |
|-------------------|-------------------|
| 36. Citrus | 37. Pineapple |
| 38. Sapota | 39. Pomegranate |
| 40. Grapes | 41. Apple |
| 42. Mango | 43. Guava |
| 44. Banana | 45. Litchi |
| 46. Loquat | 47. Strawberry |
| 48. Olive | 49. Watermelon |
| 50. Fig | 51. Phalsa |
| 52. Persimmon | 53. Custard apple |
| 54. Raspberry | 55. Kiwi |
| 56. Passion fruit | 57. Saffron |
| 58. Papaya | 59. Apricot |
| 60. Peach | 61. Pear |
| 62. Cherry | 63. Walnut |
| 64. Ber | 65. Amla |

Spice Crops

- | | |
|--------------------|--------------------|
| 66. Small Cardamom | 67. Large Cardamom |
| 68. Black Pepper | 69. Coriander |
| 70. Cumin | 71. Fennel (Saunf) |
| 72. Ginger | |

Plantation Crops

- | | |
|---------------|--------------|
| 73. Coconut | 74. Cashew |
| 75. Areca nut | 76. Oil palm |
| 77. Tea | |

LIST OF PESTICIDES REFUSED REGISTRATION

S.No.	Name of Pesticides
1.	Ammonium Sulphamate
2.	Azinphos Ethyl
3.	Azinphos Methyl
4.	Binapacryl
5.	Calcium Arsenate
6.	Carbophenothion
7.	Chinomethionate (Morestan)
8.	Dicrotophos
9.	EPN
10.	Fentin Acetate
11.	Fentin Hydroxide
12.	Lead Arsenate
13.	Leptophos (Phosvel)
14.	Mephosfolan
15.	Mevinphos (Phosdrin)
16.	2,4, 5-T
17.	Thiodemeton / Disulfoton
18.	Vamidothion

PESTICIDES / FORMULATIONS BANNED IN INDIA

A. Pesticides Banned for manufacture, import and use .	
1.	Aldicarb
2.	Aldrin
3.	Benzene Hexachloride
4.	Calcium Cyanide
5.	Chlorbenzilate
6.	Chlordane
7.	Chlorofenvinphos
8.	Copper Acetoarsenite
9.	Dibromochloropropane
10.	Dieldrin
11.	Endrin
12.	Ethyl Mercury Chloride
13.	Ethyl Parathion
14.	Ethylene Dibromide
15.	Heptachlor
16.	Lindane (Gamma-HCH) (Banned vide Gazette Notification No S.O. 637(E) Dated 25/03/2011)- Banned for Manufacture, Import or Formulate w.e.f. 25th March,2011 and banned for use w.e.f. 25th March,2013.
17.	Maleic Hydrazide
18.	Menazon
19.	Metoxuron
20.	Nitrofen

	21.	Paraquat Dimethyl Sulphate
	22.	Pentachloro Nitrobenzene
	23.	Pentachlorophenol
	24.	Phenyl Mercury Acetate
	25.	Sodium Methane Arsonate
	26.	TCA (Trichloro acetic acid)
	27.	Tetradifon
	28.	Toxaphene(Camphechlor)
	29.	Lindane (Gama HCH)
B.	Pesticide formulations banned for import, manufacture and use	
	1.	Carbofuron 50% SP
	2.	Methomyl 12.5% L
	3.	Methomyl 24% formulation
	4.	Phosphamidon 85% SL
C.	Pesticide / Pesticide formulations banned for use but continued to manufacture for export	
	1.	Captafol 80% Powder
	2.	Nicotin Sulfate
D.	<p>Pesticides Withdrawn (Withdrawal may become inoperative as soon as required complete data as per the guidelines is generated and submitted by the Pesticides Industry to the Government and accepted by the Registration Committee. (S.O 915(E) dated 15th Jun,2006)</p>	
	1.	Dalapon
	2.	Ferbam
	3.	Formothion
	4.	Nickel Chloride
	5.	Paradichlorobenzene (PDCB)

	6.	Simazine
	7.	Warfarin

PESTICIDES RESTRICTED FOR USE IN INDIA

S.No.	Name of Pesticides	Details of Restrictions
1.	Aluminium Phosphide	<p>The Pest Control Operations with Aluminium Phosphide may be undertaken only by Govt./Govt. undertakings / Govt. Organizations / pest control operators under the strict supervision of Govt. Experts or experts whose expertise is approved by the Plant Protection Advisor to Govt. of India except ¹Aluminium Phosphide 15 % 12 g tablet and ²Aluminum Phosphide 6 % tablet.</p> <p><i>[RC decision circular F No. 14-11(2)-CIR-II (Vol. II) dated 21-09-1984 and G.S.R. 371(E) dated 20th may 1999]. ¹Decision of 282nd RC held on 02-11-2007 and, ²Decision of 326th RC held on 15-02-2012.</i></p> <p>The production, marketing and use of Aluminium Phosphide tube packs with a capacity of 10 and 20 tablets of 3 g each of Aluminium Phosphide are banned completely.</p> <p>(S.O.677 (E) dated 17thJuly, 2001)</p>
2.	Captafol	<p>The use of Captafol as foliar spray is banned. Captafol shall be used only as seed dresser. (S.O.569 (E) dated 25thJuly, 1989)The manufacture of Captafol 80 % powder for dry seed treatment (DS) is banned for use in the country except manufacture for export.</p> <p>(S.O.679 (E) dated 17thJuly, 2001)</p>
3.	Cypermethrin	<p>Cypermethrin 3 % Smoke Generator, is to be used only through Pest Control Operators and not allowed to be used by the General Public. [Order of Hon,ble High Court of Delhi in WP(C) 10052 of 2009 dated 14-07-2009 and LPA-429/2009 dated 08-09-2009]</p>
4.	Dazomet	<p>The use of Dazomet is not permitted on Tea.</p> <p>(S.O.3006 (E) dated 31st Dec, 2008)</p>

5.	Diazinon	Diazinon is banned for use in agriculture except for household use. (S.O.45 (E) dated 08 th Jan, 2008)
6.	Dichloro Diphenyl Trichloroethane (DDT)	The use of DDT for the domestic Public Health Programme is restricted up to 10,000 Metric Tonnes per annum, except in case of any major outbreak of epidemic. M/s Hindustan Insecticides Ltd., the sole manufacturer of DDT in the country may manufacture DDT for export to other countries for use in vector control for public health purpose. The export of DDT to Parties and State non-Parties shall be strictly in accordance with the paragraph 2(b) article 3 of the Stockholm Convention on Persistent Organic Pollutants (POPs). (S.O.295 (E) dated 8 th March, 2006) Use of DDT in Agriculture is withdrawn. In very special circumstances warranting the use of DDT for plant protection work, the state or central Govt. may purchase it directly from M/s Hindustan Insecticides Ltd. to be used under expert Governmental supervision. (S.O.378 (E) dated 26 th May, 1989)
7.	Fenitrothion	The use of Fenitrothion is banned in Agriculture except for locust control in scheduled desert area and public health. (S.O.706 (E) dated 03 rd May, 2007)
8.	Fenthion	The use of Fenthion is banned in Agriculture except for locust control, household and public health. (S.O.46 (E) dated 08 th Jan, 2008)
9.	Methoxy Ethyl Mercuric Chloride (MEMC)	The use of MEMC is banned completely except for seed treatment of potato and sugarcane. (S.O.681 (E) dated 17 th July, 2001)
10.	Methyl Bromide	Methyl Bromide may be used only by Govt./Govt. undertakings/Govt. Organizations / Pest control operators under the strict supervision of Govt. Experts or Experts whose expertise is approved by

		the Plant Protection Advisor to Govt. of India. [G.S.R.371 (E) dated 20 th May, 1999 and earlier RC decision]
11.	Methyl Parathion	Methyl Parathion 50 % EC and 2% DP formulations are banned for use on fruits and vegetables. (S.O.680 (E) dated 17 th July, 2001) The use of Methyl Parathion is permitted only on those crops approved by the Registration Committee where honeybees are not acting as a pollinators. (S.O.658 (E) dated 04 th Sep., 1992.)
12.	Monocrotophos	Monocrotophos is banned for use on vegetables. (S.O.1482 (E) dated 10 th Oct, 2005)
13.	Sodium Cyanide	The use of Sodium Cyanide shall be restricted for Fumigation of Cotton bales under expert supervision approved by the Plant Protection Advisor to Govt. of India. (S.O.569(E) dated 25 th July, 1989)

Annexure- VIII

**Insecticides / Pesticides Registered under section 9(3) of the Insecticides Act, 1968
for use in the Country:
(As on 20/05/2015)**

S.No.	Name of the Pesticide
1.	2,4-Dichlorophenoxy Acetic Acid
2.	Acephate
3.	Acetamiprid
4.	Alachlor
5.	Allethrin
6.	Alphacypermethrin
7.	Alphanaphthyl Acetic Acid
8.	Aluminium Phosphide
9.	Ametroctradin
10.	<i>Ampelomyces quisqualis</i>
11.	Anilophos
12.	Atrazine
13.	Aureofungin
14.	Azadirachtin (Neem Products)
15.	Azimsulfuron
16.	Azoxystrobin
17.	<i>Bacillus sphaericus</i>
18.	<i>Bacillus thuringiensis</i> var. <i>galleriae</i>
19.	<i>Bacillus thuringiensis</i> var. <i>israelensis</i>
20.	<i>Bacillus thuringiensis</i> var. <i>kurstaki</i>
21.	Barium Carbonate
22.	Beauveria bassiana
23.	Bendiocarb
24.	Benfuracarb
25.	Benomyl
26.	Bensulfuron Methyl
27.	Beta Cyfluthrin
28.	Bifenazate
29.	Bifenthrin
30.	Bispyribac Sodium
31.	Bitertanol
32.	Bromadiolone
33.	Buprofezin
34.	Butachlor
35.	Captan
36.	Carbaryl
37.	Carbendazim
38.	Carbofuran
39.	Carbosulfan

40.	Carboxin
41.	Carfentrazone Ethyl
42.	Carfentrazone Ethyl+Chloropropionic acid
43.	Carpropamid
44.	Cartap Hydrochloride
45.	Chlorantraniliprole
46.	Chlorfenapyr
47.	Chlorfluazuron
48.	Chlorimuron ethyl
49.	Chlormequat Chloride (CCC)
50.	Chlorothalonil
51.	Chlorpropham
52.	Chlorpyrifos
53.	Chlorpyrifos Methyl
54.	Chlothianidin
55.	Chromafenozide
56.	Cinmethylen
57.	Clodinafop-propargyl
58.	Clodinafop-propargyl+Sodium acifluorfen
59.	Clomazone
60.	Copper Hydroxide
61.	Copper Oxychloride
62.	Copper Sulphate
63.	Coumachlor
64.	Coumatetralyl
65.	Cuprous Oxide
66.	Cyantraniliprole
67.	Cyazofamid
68.	Cyfluthrin
69.	Cyhalofop-butyl
70.	Cymoxanil
71.	Cypermethrin
72.	Cyphenothrin
73.	Dazomet
74.	Deltamethrin (Decamethrin)
75.	Diafenthiuron
76.	Diazinon
77.	Dichloro Diphenyl Trichloroethane (DDT)
78.	Dichloropropene and Dichloropropane mixture (DD mixture)
79.	Diclofop-Methyl
80.	Diclosulam
81.	Diclorvos (DDVP)
82.	Dicofol
83.	Difenoconazole
84.	Diflubenzuron

85.	Dimethoate
86.	Dimethomorph
87.	Dinocap
88.	Dinotefuron
89.	Dithianon
90.	Diuron
91.	Dodine
92.	D-trans Allethrin
93.	Edifenphos
94.	Emamectin Benzoate
95.	Endosulfan*
96.	Ethephon
97.	Ethion
98.	Ethiprole
99.	Ethofenprox (Etofenprox)
100.	Ethoxysulfuron
101.	Ethylene Dichloride and Carbon Tetrachloride mixture (EDCT Mixture 3:1)
102.	Etoazole(FI)
103.	Famoxadone
104.	Fenamidone
105.	Fenarimol
106.	Fenazaquin
107.	Fenitrothion
108.	Fenobucarb (BPMC)
109.	Fenoxaprop-p-ethyl
110.	Fenpropathrin
111.	Fenpyroximate
112.	Fenthion
113.	Fenvalerate
114.	Fipronil
115.	Flonicamid
116.	Fluazifop-p-butyl
117.	Flubendiamide
118.	Fluchloralin
119.	Flufenacet
120.	Flufenoxuron
121.	Flufenzine
122.	Fluopicolide
123.	Flusilazole
124.	Fluvalinate
125.	Forchlorfenuron
126.	Fosetyl-Al
127.	Gibberellic Acid
128.	Glufosinate Ammonium
129.	Glyphosate

130.	Helosulfuron methyl
131.	Hexaconazole
132.	Hexazinone
133.	Hexythiazox
134.	Hydrogen Cyanamide
135.	Imazamox
136.	Imazethapyr
137.	Imidacloprid
138.	Imiprothrin
139.	Indoxacarb
140.	Iprobenfos (Kitazin)
141.	Iprodione
142.	Iprovalicarb
143.	Isoprothiolane
144.	Isoproturon
145.	Kasugamycin
146.	Kresoxim Methyl
147.	Lambdacyhalothrin
148.	Lime Sulphur
149.	Linuron
150.	Lufenuron
151.	Magnesium Phosphide Plates
152.	Malathion
153.	Mancozeb
154.	Mandipropamid
155.	Mepiquate Chloride
156.	Mesosulfuron Methyl + Iodosulfuron Methyl Sodium
157.	Metaflumizone
158.	Metalaxyl
159.	Metalaxyl-M
160.	Metaldehyde
161.	<i>Metarhizium anisopliae</i>
162.	Methabenzthiazuron
163.	Methomyl
164.	Methoxy Ethyl Mercury Chloride (MEMC)
165.	Methyl Bromide
166.	Methyl Chlorophenoxy Acetic Acid (MCPA)
167.	Methyl Parathion
168.	Metiram
169.	Metofluthrin
170.	Metolachlor
171.	Metribuzin
172.	Metsulfuron Methyl
173.	Milbemectin
174.	Monocrotophos

175.	Myclobutanil
176.	Novaluron
177.	Nuclear polyhydrosis virus of <i>Helicoverpa armigera</i>
178.	Nuclear polyhydrosis virus of <i>Spodoptera litura</i>
179.	Orthosulfamuron
180.	Oxadiargyl
181.	Oxadiazon
182.	Oxycarboxin
183.	Oxydemeton-Methyl
184.	Oxyfluorfen
185.	Paclobutrazol
186.	Paraquat dichloride
187.	Penconazole
188.	Pencycuron
189.	Pendimethalin
190.	Penoxsulam
191.	Permethrin
192.	Phenthoate
193.	Phorate
194.	Phosalone
195.	Phosphamidon
196.	Picoxystrobin
197.	Pinoxaden
198.	Prallethrin
199.	Pretilachlor
200.	Primiphos-methyl
201.	Profenophos
202.	Prohexadione Calcium
203.	Propanil
204.	Propaquizafop
205.	Propergite
206.	Propetamphos
207.	Propiconazole
208.	Propineb
209.	Propoxur
210.	<i>Pseudomonas fluorescens</i>
211.	Pymetrozin (FI)
212.	Pyrachlostrobin
213.	Pyraclostrobin+Epoxiconazole
214.	Pyrazosulfuron ethyl
215.	Pyrethrins (pyrethrum)
216.	Pyridalyl
217.	Pyriproxyfen
218.	Pyriothiobac sodium
219.	Quinalphos

220.	Quizalofop ethyl
221.	Quizalofop-P-tefuryl
222.	S-bioallethrin
223.	Sodium Cyanide
224.	Spinosad
225.	Spiromesifen
226.	Streptomycin + Tetracycline
227.	sulfosulfuron
228.	sulphur
229.	Tebuconazole
230.	Tembotrione
231.	Temephos
232.	Tetraconazole(FI)
233.	Thiacloprid
234.	Thifluzamide
235.	Thiobencarb (Benthiocarb)
236.	Thiodicarb
237.	Thiomethoxain
238.	Thiometon
239.	Thiophanate methyl+Pyraclostrobin
240.	Thiophanate-Methyl
241.	Thiram
242.	Tolfenpyrad
243.	Transfluthrin
244.	Triacontanol
245.	Triadimefon
246.	Triallate
247.	Triasulfuron
248.	Triazophos
249.	<i>Trichoderma harzianum</i>
250.	<i>Trichoderma Viride</i>
251.	Trichlorofon
252.	Tricyclazole
253.	Tridemorph
254.	Trifloxistrobin
255.	Trifluralin
256.	Validamycin
257.	<i>Verticillium lecanii</i>
258.	Zinc Phosphide
259.	Zineb
260.	Ziram

Endosulfan*:- Endosulfan has been banned by the Supreme Court of India w.e.f. 13-05-2011 for production, use & sale, all over India, till further orders vide ad-Interim order in the Writ Petition (Civil) No. 213 of 2011.

[Pesticides and their formulation registered under the Insecticides Act](#)

[Insecticides registered under the Insecticides Act for use in Household/Public Health/Rodent etc.](#)

[Compendium of Registered pesticides, source of supply and list of manufacturers under Section 9\(3\) of the Insecticides Act, 1968](#)

BIOPESTICIDES AND BOTANICAL PESTICIDES REGISTERED UNDER
THE INSECTICIDES ACT 1968

1. BIOPESTICIDES BASED ON BACTERIA, FUNGI AND VIRUSES

(A) ANTAGONISTIC FUNGI AND BACTERIA

Bt. / Bs.

- a) *Bacillus thuringiensis* var *Israelensis* strain 164, Serotype H-14 WP formulation
- b) *Bacillus thuringiensis* var *Kurstaki* strain A-97, Serotype H-3a, 35 WP
- c) *Bacillus thuringiensis* var *Israelensis* Serotype H-14, strain VCRC B-17 slow release Granules.
- d) *Bacillus thuringiensis* var *Israelensis* Serotype H-14, strain VCRC B-17 WP formulation.
- e) *Bacillus thuringiensis* var *Israelensis* (WS)
- f) *Bacillus thuringiensis* var *Israelensis* Serotype H-14, 12% & 5% AS

PSEUDOMONAS

- a) *Pseudomonas fluorescens* 0.5% WP & 1% WP
- b) *Pseudomonas fluorescens* 1.25% WP
- c) *Pseudomonas fluorescens* 2.0% WP
- d) *Ampelomyces quisqualis* 2% WP

TRICHODERMA

- a) *Trichoderma viride* WP
- b) *Trichoderma viride* 1% WP
- c) *Trichoderma viride* 0.50% WS
- d) *Trichoderma harzianum* 0.50% WS, 1% WP

e) *Trichoderma viride* 1.15% WP

(B) **ENTOMOGENOUS FUNGI**

a) *Beauveria bassiana* 1.15% WP

b) *Metarrhizium anisopliae* 1.15% WP

c) *Paecilomyces lilacinus* 1% WP

d) *Verticillium lecanii* 1.15% WP

e) *Verticillium chlamyosporium* 1% WP

(C) **VIRUSES**

a) NPV of *Helicoverpa armigera* (AS)

b) NPV of *Helicoverpa armigera* 0.43% (AS)

c) NPV of *Spodopetera litura* – 0.50% (AS)

2. **BOTANICAL PESTICIDES**

A **NEEM BASED**

a) Azadirachtin 0.03% EC

b) Azadirachtin 0.15% EC

c) Azadirachtin 0.3% EC

d) Azadirachtin 0.5% EC

e) Azadirachtin 1% EC

f) Azadirachtin 5% EC

g) Azadirachtin 25% EC

h) Azadirachtin 10% & 15% EC

B **CYMBOPOGAN**

Cymbopogan 20% EC

C **PYRETHRUM (PYRETHRIN)**

- a) Pyrethrin 0.05% w/w (HH)
- a) Pyrethrum extract 2% tech.
- b) Pyrethrum 0.2% (HH)