



सत्यमेव जयते

Government Of India

PLANT QUARANTINE AT A GLANCE

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Regional Plant Quarantine Station, Chennai

Directorate of Plant Protection, Quarantine & Storage

Department of Agri & Farmers Welfare

Ministry of Agriculture & Farmers Welfare

Directorate of Plant Protection Quarantine & Storage

- ❖ Directorate of Plant Protection Quarantine & Storage (DPPQS) is an attached office under Ministry of Agriculture & Farmers Welfare, GOI, New Delhi
- ❖ DPPQS was established in 1946, on the recommendation of Wood Head Commission
- ❖ DPPQS is an apex organization for advising the Central Government & State Governments in all matters related to Plant Protection

Directorate of PPQS- Major Activities

1. To enforce PQ Regulations "PQ Order 2003" issued under the "Destructive Insects and Pests Act, 1914" and amendments issued thereunder to prevent introduction & Spread of Exotic Pests
2. To implement the provisions of Insecticides Act, 1968 and rules framed thereunder for efficacious and safe use of Pesticides
3. To fulfill International Commitments and obligations in respect of Phytosanitary measures and Locust Control.
4. Monitoring of Locust activity / population through regular surveys and surveillance round the year and forewarn in Scheduled Desert Area in Rajasthan, Gujarat and part of Haryana and to coordinate control operations in case of invasion/upsurge of locust pest
5. To introduce and popularize innovative Plant Protection Technologies such as Integrated Pest Management (IPM) practices
6. To impart training in areas of Phytosanitary Inspections, Plant Protection Technology, Pesticide Quality Testing and Pesticide Residue Analysis etc.

Definitions

- ▶ **Plant Quarantine** is defined as "All activities designed to prevent the introduction, establishment and spread of quarantine pests or to ensure their official control" (FAO).
- ▶ **Pest** is defined as "Any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products" (FAO)
- ▶ **Quarantine Pest** is defined as "A pest of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being Officially controlled". (FAO)
- ▶ **Phytosanitary Certificate** means a certificate issued in the model format prescribed under the International Plant Protection Convention (IPPC) of the Food & Agricultural Organization (FAO) and issued by an authorized officer at the country of origin of consignment or re-export

DIP Act, 1914

- Section 3 of DIP Act, 1914 empowers GOI to regulate, prohibit, restrict the import of any article or class of article likely to cause infection to any crop or insects or any class of insects, either generally or in any particular manner, with reference to the country of origin or the route by which imported or otherwise, by notification in the official Gazette.

DIP Act, 1914

- ▶ Section 4 of DIP Act, 1914 empowers Customs to operate the notifications issued under section 3, as if the same issued under Section 11 of Customs Act, 1962 (replacing Section 19 of Sea Customs Act, 1878) regarding power to prohibit importation or exportation of goods
- ▶ **The DIP (Amendment) Act, 1992 confers the power to Central Government to levy inspection fee, fumigation or treatment and other charges under sub-section (1) of Section 3 of the Principal Act**

Important Notifications of PQ India

1914

- Destructive Insects and Pests Act, 1914

1936

- Import Regulations

1972

- Regulations to import of cotton

1984

- PFS Order, 1984

1988

- National Policy on Seed Development

1989

- PFS Order, 1989 (revised)

1992

- Amendment of DIP Act – for levying import inspection fee

2003

- Plant Quarantine (Regulation of Import into India) Order, 2003

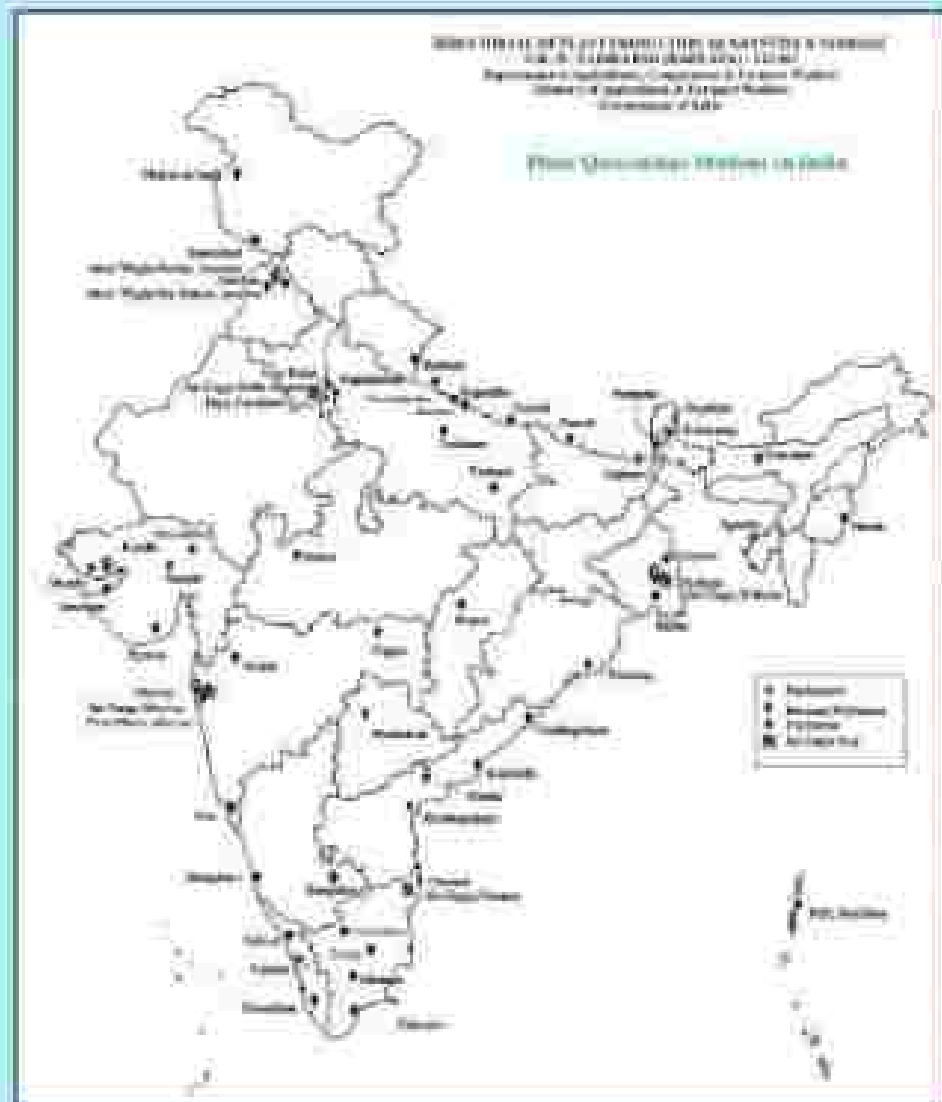
The Plant Quarantine (Regulation of Import into India) Order, 2003 (PQ Order, 2003)

- Notified under section 3 (1) of DIP Act, 1914 vide Gazette Notification S.O.1322(E) dated 18th November, 2003.
- Came into force with effect from 1 st Jan, 2004
- Replaces all the preceding orders/ notifications
- Formulated on the scientific basis of PRA
- Commodities are categorized into various schedules based on pest risk analysis
- Subsequently 98 amendments have been issued by gazette notifications

Mandate

1. To prevent the entry, establishment and spread of exotic pests in India as per the provisions of **The DIP Act, 1914** and other notifications issued there under compiled as **PQ (Regulation of Import into India) Order, 2003**
2. To fulfill International Commitments in respect of Phytosanitary measures

Plant Quarantine Stations in India



- DPPQ&S Head Quarter , Faridabad
- Plant Quarantine Stations- 73

APPA (PQ)/Scheme In-charge



RPOs, Mumbai

Airport, Mumbai
PQS, JNPT, Nhava Sheva, Mumbai
PQS Intr. Arrival
Navkar Unit, RPOs, Mumbai
PQS, Nasik
PQS, Nagpur
PQS Goa
PQS, Indore
PQS, Raipur

RPOs, Chennai

PQS, Coimbatore
PQS, Tuticorin
PQS, Tiruchirapalli
PQS, Madurai, Airport
PQS, Cuddalore, Airport
PQS, Kakinada
PQS, Vishakapatnam
PQS, Krishnapatnam
PQS, Guntur
PQS, Machilipatnam
PQS, Pondicherry

RPOs, New Delhi

International Airport, New Delhi
PQS Air cargo, T-III, New Delhi
PQS Tuglakabad
PQS, Rupadiah
PQS, Sanauli
PQS, Banbasa
PQS, Varanasi
PQS, Lucknow

RPOs, Kolkata

Air cargo Complex, Kolkata
PQS, Haldia
PQS, Panitanki
PQS, Bangaon
PQS, Bagdogra
PQS, Moreh
PQS, Kalimpong
PQS, Paradip
PQS, Gopalpur
PQS, Guwahati
PQS, Port Blair
PQS, Agartala
PQS, Gopalganj
PQS, Raxual
PQS, Jodbani

RPOs, Amritsar

Airport, Amritsar
Attari Wagha Border-LCs
Attari Railway Station
PQS, Chakandabagh
PQS, Salamabad

RPOs, Kandla

PQS, Jamnagar
PQS, Pipavav Port
PQS, Mundra
PQS, Ahmedabad
PQS, Sanand
PQS, Mandvi
PQS, Navlakhi
PQS, Okha
PQS, Viravel

RPOs, Bengaluru

PQS, Hyderabad
PQS, Mangalore
PQS, Karwar
PQS, Thiruvananthapuram
PQS, Cochin
PQS, Airport, Cochin
PQS, Calicut
PQS, Vizhinjam
PQS, Alleppy

Major Activities at RPQS Chennai

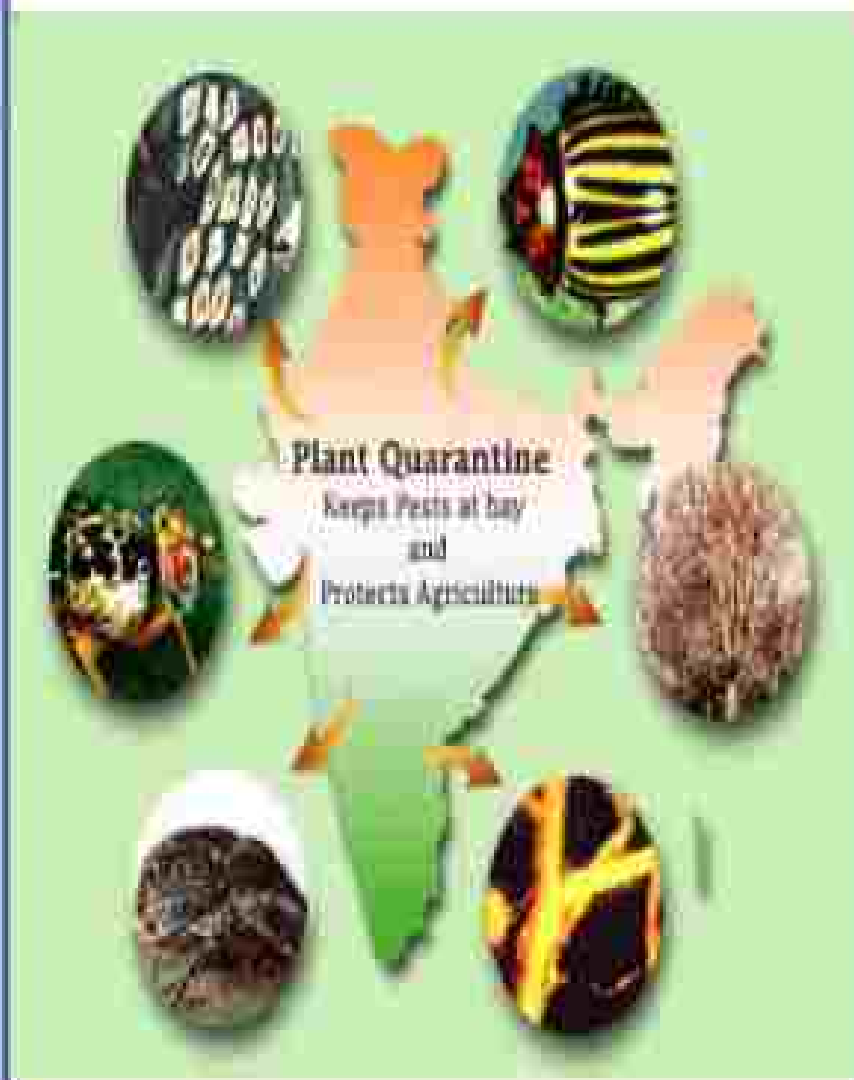
1. EXPORT

- Inspection, testing and appropriate phytosanitary treatment as per requirement of importing country.
- Issuance of Phytosanitary Certificate (PSC) to facilitate safe trade as per bilateral agreements with importing country
- Issuance of Import Permit as per requirement of importing country

2. IMPORT

- Inspection, laboratory testing; and phytosanitary treatments if required, of imported Agri Commodities to prevent the introduction of exotic pests (Insect, Nematodes, Plant diseases, Weeds/weed seeds etc.).
- Monitoring of Post Entry Quarantine facilities Inspection & certification,
- Inspection of plants/planting materials in PEQ facilities & final release of imported plant propagative material.

3. Registration of processing units, packhouses, fumigation agencies & Treatment Providers



National Standards for Phytosanitary Measures (NSPM)

- ▶ DPPQS (NPPO) developed NSPMs in line with ISPMs
 - ◆ **NSPM 9:** Guidelines for certification of Forced Hot Air Treatment (FHAT) facilities for wood packaging material
 - ◆ **NSPM 11:** Quarantine Treatment and application procedure – Methyl Bromide fumigation
 - ◆ **NSPM-12 :** Guidelines for Accreditation of Fumigation Agency for undertaking Mbr fumigation
 - ◆ **NSPM-13 :** Requirements for Establishment of Pest Free Area for Mango nut (Seed) 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 for Mango fruits
 - ◆ **NSPM-18 :** Heat Treatment for Niger seeds
 - ◆ **NSPM-20:** Vapour Heat Treatment for fresh fruits & vegetables Guidelines for Regulating Export, Import & Release of Biological Control Agents & their Beneficial Organisms
 - ◆ **NSPM-21:** Certification of Irradiation treatment facilities
 - ◆ **NSPM-22:** Guidelines for Accreditation of Fumigation Agency for undertaking ALP fumigation
 - ◆ **NSPM-23:** Guidelines for Phytosanitary Service Agency and Phytosanitary Service Provider for Inspection of Plant/ Plant products & other regulated Articles in export
 - ◆ **NSPM-24:** Guidelines for establishment of **Pest Free Area**

PQ Order 2003 – Glimpses

Chapter	Dealing With
Chapter I	Preliminary Clause 1: Title & Commencement : PQ (Regulation of Import into India) Order, 2003 Clause 2: Definitions
Chapter II	General condition for Import Clause 3: Permits for Import of plants, plant products etc. Clause 4: Import of soil, sand, similar material and stone. Clause 5: Fees for inspection, fumigation, etc. Clause 6: Permits required for Import of Germplasm, Transgenic or GMO Clause 7: Import of live insects and arthropods/nematodes/ microbial cultures including algae & biocontrol agents Clause 8: Permit required for import of plants and plant products (Bulk shipment in vessel, GMO) Clause 9: Requirement of Import of Wood and Timber
Chapter III	Special conditions of import Clause 10 : Special conditions for import of plant species
Chapter IV	Post Entry Quarantine; Clause 11: Post Entry Quarantine
Chapter V	Appeal & Revision; Clause 12: Appeal; Clause 13: Revision
Chapter VI	Power of Relaxation; Clause 14 Relaxation conditions of IP & PSC
Chapter VII	Repeal and Savings; Clause 15: Repeal & Savings

Schedules under PQ order 2003

Schedule I: Points of Entry for Imports of plants/plant materials and other articles. (Seaports- 47, Airports- 25, Land frontier stations- 24)

Schedule II: List of Inland Container Depots (ICD) and Container Freight Stations (CFC) for import of plants and plant products (80 Nos.)

Schedule III: List of Foreign Post Offices for import of plants and plant products (11 Nos.)

Schedule IV: List of plants/planting materials and countries from where import is prohibited along with justifications (15 Nos.)

Schedule V: List of plants and plant materials restricted imports and permissible only with recommendation of authorized institutions with additional declarations and special conditions (17 Nos.)

Schedule VI: List of plants/plant materials permitted import with additional declarations and special conditions (701 Nos.)

Schedule VII: List of plants/planting materials where imports are permissible based on phytosanitary certificate issued by the exporting country, the inspection conducted by PQ Inspectors and fumigation, if required, including all other general conditions (519 Nos.)

Schedule VIII: List of Quarantine Weed Species (57 Nos.)

Schedules under PQ order, 2003

Schedule IX A: Inspection Fees;

Schedule IX B: Fumigation/disinfection/disinfestation/supervision charges.

Schedule X: List of Import Permit (IP) Issuing Authorities for Import of Seeds, Plants and Plant Products and other articles (43 Nos).

Schedule XI: List of Inspection Authorities for Certification of Post-Entry Quarantine facilities and inspection of growing plants (43 + 3).

Schedule XII: Quantities of seeds permitted for trial purpose/accession to gene bank of National Bureau of Plant Genetic Resources, New Delhi (23 commodities listed for MLT & Agronomy trials & accession to gene bank)

General conditions for Import-under PQ Order 2003

- No plants, plant products and other regulated articles shall be imported into India without **complying the phytosanitary conditions** stipulated under this Order.
- Import of consignments of **seeds of coarse cereals, pulses, oil seeds and fodder seeds and seeds/stock material of fruit plant species for propagation** shall only be permitted based on the recommendations of EXIM Committee of Department of Agriculture & Farmers Welfare (DA&FW), **except the trial material of the same as specified in Schedule-XII of Plant Quarantine Order.**
- All consignments of **seeds and plants for propagation and regulated articles** such as live insects, microbial cultures, bio-control agents, soil, growing media (with soil, peat or other organic materials) and peat or sphagnum moss **shall only be imported into India through Regional Plant Quarantine Stations**, provided that **import of germplasm/transgenic plant material and genetically modified organisms shall be permitted only through New Delhi Airport.**

▪

General conditions for Import

- All consignments of sand in any form for industrial and non-agricultural purpose shall be imported into India through notified sea ports under Schedule-I.
- All consignments of stone (aggregated/dust) for non-agricultural purposes shall be permitted through the seaport, Port Blair, Nancowry (Kamorta), Port Meadow of Andaman and Nicobar Island from Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. (S.O. 2390(E) dated 20th July, 2020).
- No consignment of seed or grain shall be permitted to imported with contamination of quarantine weeds which are listed in schedule VIII unless the said consignments has been devitalized by the exporting country and a certificate to that effect has been endorsed in the PSC issued by the exporting country

Import of live insects and other arthropods/ Nematodes/ microbial cultures including algae/bio- control agents (Clause 7)

- No consignment of live insects and other arthropods/nematodes/ microbial cultures including algae/bio-control agents shall be permitted into India without valid import permit issued by competent authority as specified under Schedule-X.
- The consignment of beneficial insects shall be accompanied by a certificate issued by NPPO at the country of origin with additional declarations for freedom from specified parasites and parasitoids and the bio-control agents free from hyper-parasites.
- The consignment of beneficial insects/bio-control agents shall be subjected to Post-entry quarantines.

Clause 5 : Fee for inspection, Fumigation etc.

- ▶ Fees are prescribed in **schedule XI** for inspection fumigation etc.
- ▶ Recently, a **Gazette notification S. O. 4871 (E) dt. 13.10.2022** has been issued:-
 - ▶ "In case of consignments requiring pre-shipment fumigation with MBr originating from countries which have phased out the use of MBr for quarantine and pre shipment purposes, the consignment shall be released after charging the normal inspection fee.
- ▶ The NPPO of the country will be required to submit relevant documents to NPPO India to establish phased out country status".

Glimpses of PQ Order, 2003

- ▶ Plants listed under Schedule-V, VI & VII only permitted to import
- ▶ Phytosanitary Certificate issued at country of origin/ re-export is mandatory and should include additional declarations and special conditions (and IP Number if applicable)

Processed Items

- Commodities with least or no phytosanitary risk due to its processing are listed and available in PQMS website
- These commodities do not come under the purview of PQ.

List of Processed Items (Plant Products) which does not require Plant Quarantine Clearance

Sl. No.	Processed Items
1.	Asafoetida (Hing) & Guggul (gum) / extracts of various trees including Gambier extract and Tinsaponin extract.
2.	Agar agar extract, ingredient for dehydrated culture media
3.	Baskets, hat, mats and handicraft articles woven with less than 6 mm thick sticks
4.	Bleached and dried Scandinavian mosses (steam sterilized) for decorative purpose.
5.	Cooked items hermetically packed
6.	Fruit- Crystallized, infused with sugar
7.	Dead yeast
8.	Derivatives of sugarcane like sugar and molasses
9.	Bleached plant fiber including waxed bleached cow bristle fiber, processed jute products, natural waxed coconut fiber, processed cotton linter pulp
10.	Extruded cereals (Flakes, Porridge) hermetically packed
11.	Feeds stuffs ready for consumption- Jelly, Jam, Marmalade, Sauces, Mashed potatoes (dried), Soup (dried), Papad
12.	Fruits and vegetables- Canned juice, pulp and nates
13.	Fruit and vegetables - Cooked, canned and preserved
14.	Fruits, vegetables, flowers and nuts in brine, vinegar, oil or other preservatives
15.	Fruits and vegetables - Frozen for consumption
16.	Fruits and vegetables- Minced, ground or sliced (dried or dehydrated or dried chips) including vacuum dried carrot flakes
17.	Ice cream sticks, match sticks, tooth picks, veneer peeler cores, saw dust, wood wool and shavings and thin wood pieces, wood chips, Bamboo stick (less than 6 mm thickness)
18.	Paper bags
19.	Coated nuts in hermetically packed
20.	Soybean lecithin including Soya protein isolate
21.	Starch hermetically packed
22.	Vegetable Oils, essences
23.	De-bulked oat steamed above 93°C for 10-15 minutes including processed oat flakes
24.	Medium density fiber board, processed ply wood, particle board, oriental strand board, veneer
25.	Dietary food health supplement in capsule form
26.	Marigold pellets undergone processing
27.	Malted Grains hermetically packed
28.	Processed Soy Fiber hermetically packed
29.	Jadama-Root extract
30.	Sugandhlokila berry extract
31.	Sugandhyal chitrona extract
32.	Tilam berry extract
33.	Pea fiber
34.	Spray dried corn steep powder

PQ Inspection procedure

- ▶ All imported plants/ plant materials shall be referred for PQ inspection by the Customs

Plant Quarantine procedure (in Import)

Submission of Application (Online)

Scrutiny of Application

Inspection of Consignment

Laboratory testing of Samples

- Application form PQ-15
- PSC from Exporting country
- Country of Origin
- Bill of Entry
- Bill of Lading
- Commercial Invoice
- Packing List
- Contract Agreement if any

Detection of Insects

Detection of Pathogens (QP)

Detection of Weed seeds (QWS)

Free of Pest/Pathogen/Weeds

Treatment and Degassing

Destruction/Deporation

Destruction/Deporation

Segregation

Release of the consignment

Release of the consignment

The minimum weight of samples for various crop species produce:

Minimum weight	Crop species
1000 g	Avena sativa (oat), Cajanus cajan (pigeon pea), Cicer arietinum (chick pea), Cucurbita spp., Delichos lablab (lablab bean), Fagus sylvatica (common beech), Glycine max (soybean), Gossypium spp (cotton), Hordeum vulgare (barley), Leucaena leucocephala (Leucaena), Phaseolus spp (beans), Pinus pinea (stone pine), Pisum sativum (pea), Secale cereale (rye), Vigna unguiculata (cowpea), Triticum aestivum (wheat), Vicia spp (broad bean & vetches), Zea mays (maize)
900 g	Prunus avium (sweet cherry), Sorghum vulgare (Sorghum)
500 g	Beta vulgaris (beet root), Prunus serotina (black cherry)
400 g	Oryza sativa (rice), Calopogonium mucunoides (Calopogonium)
250 g	Sorghum sudanense (Sudan grass), Spinacea oleracea (spinach), Trifolium subterraneum (subterranean clover)
200 g	Sinapis alba (white mustard)
150 g	Capsicum spp., (chillies/bell pepper), Cucumis melo (musk melon), Cucumis sativus (cucumber), Linum usitatissimum (linseed or flax), Lycopersicon esculentum (tomato), Pennisetum typhoides (pearl millet), Solanum melongena (brinjal)
100 g	Brassica napus (rape), Brassica oleracea (cabbage & cauliflower), Brassica rapa (turnip), Pinus caribaea (caribbean pine)
80 g	Allium cepa (onion), Stylosanthes spp (stylosanthes)
70 g	Allium porum (leek), Sesamum indicum (sesamum)
60 g	Cuminum cyminum (cumin), Trifolium alexandrinum (berseem)
50 g	Allium fistulosum (welsh onion), Cichorium intybus (chicory), Malus spp., (apple) Medicago lupulina (black medick), Medicago sativa (alfalfa or lucerne), Melilotus spp., (white clover) Rosa spp., (Rose), Trifolium pratense (clover)
40 g	Brassica chinensis (chinese cabbage), Brassica nigra (black mustard), Cichorium endivia (endive), Picea abies (Picea)
30 g	Daucus carota (carrot), Lactuca sativa (lettuce), Ulmus spp., (elm)
25 g	Apium graveolens (celery), Nicotiana tabacum (tobacco)

PQ Clearance procedure

- ▶ The Customs should release the consignments only after obtaining PQ clearance
- ▶ Consignments of live plants, tissue cultures listed in PQ order are inspected and given “provisional clearance” to grow in the registered PEQ facilities under the supervision of notified IA

PQ Clearance procedure

- ▶ If consignment is imported without PSC, the Joint Secretary (PP), DAFW, Ministry of Agriculture, is the competent Authority to grant such relaxations with charging 5 times of inspection fee & IP fee
- ▶ If Quarantine Pest(s) intercepted and mitigation measures are not available, the importer has to deport or destroy the consignment.
- ▶ Destruction to be arranged by the importer in the presence of PQ Inspector & Custom Official.

Role of Customs

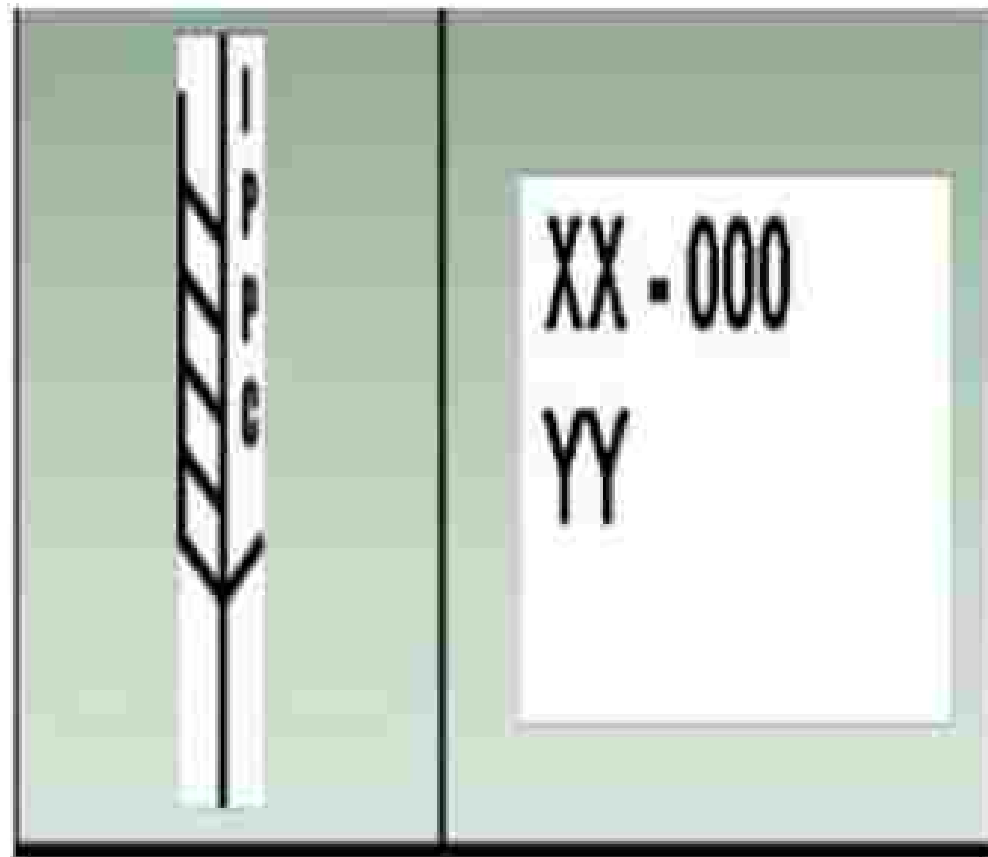
- ▶ All primary plant produce imported through cargo, passenger baggage, courier are referred to the PQMS upon arrival for PQ inspection immediately
- ▶ The plant/ plant products consignments which are not covered under the PQ Order, 2003 are to be detained
- ▶ Fruits, vegetables, flowers, bouquets weighing less than 2 Kg imported for **personal consumption** are permitted without PSC & IP

Role of Customs

- ▶ No article, packed with raw/ solid wood packing material shall be released by the officer of customs unless the wood packing material has been appropriately treated and marked as per **ISPM-15** or is accompanied by a PSC with the treatment endorsed on it

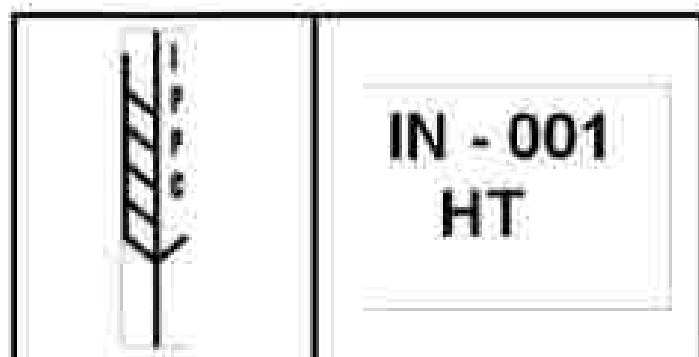
Marking for Approved Measures

- ▶ The mark should at minimum include
 - IPPC Symbol or logo
 - XX – represents the ISO two letter country code
 - 000 – represents the unique number assigned by the NPPO to the producer of the WPM/ treatment provider
 - YY – represents either HT or MB or KD

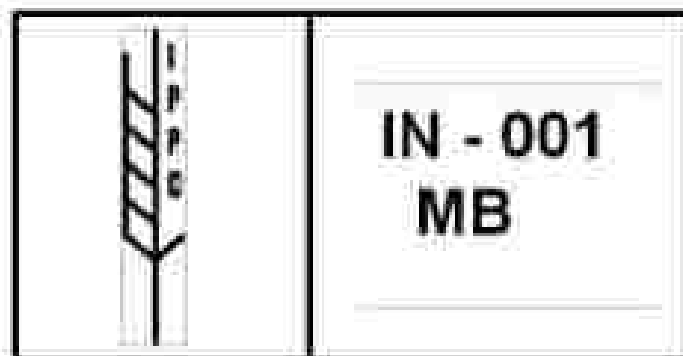


Markings for Export from India

Heat Treatment



Methyl Bromide fumigation



**Accredited treatment providers lists are available
on website <http://pqms.cgg.gov.in>**

Role of Customs

- ▶ In the absence of IPPC mark, the packing material should be referred to PQ by the Customs, for inspection, treatment and clearance

or

- ▶ custom may deport the such packing material to the exporting country

PEQ Inspection & Release Procedure

- ❖ DPPQS brought out a "SOP for Post Entry Quarantine Inspection" (2007) for uniform certification and inspection
- ❖ Guidelines for PEQ facility certification & PEQ Inspection (2018)

In June, 2018 major amendment took place in PQ Order, 2003 by Gazette Notification wherein

- Joint inspection by IA & PQ Officer of the PEQ facility for certification by IA
- Provision release of the Propagative Planting material is granted by RPQS to the certified PEQ facilities only.
- Joint inspection by IA & PQO of the Propagative Planting material in the PEQ facilities at different interval during PEQ period
- Final Clearance by O/I RPQS based on Joint Inspection Reports

Role of Customs

- ▶ Plants, cuttings, bulbs, tubers, rhizomes and seeds imported for propagation and sowing are permitted only through 6 Regional PQS i.e. Chennai, Bengaluru, Amritsar, Kolkata, Mumbai & New Delhi, either as cargo or as accompanied baggage

Time Lines

1	Plants & Planting material required PEQ viz. Bulbs/Tubers/Cuttings/Saplings/ Wood buds etc.	12-24 Hrs for Provisional Release Final Release is issued after completion of PEQ Period
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Commodity	PEQ period	Closed facility	Open facility	No. of Inspection
<i>Anthurium</i> spp & other Aroids, Asparagus, Cacti, Chrysanthemum, Carnation, Gerbera, Hydrangea, Orchids, <i>Pelargonium</i>	45-60 days	✓	X	Two
Chestnut, Citrus, Coffea, Oilpalm, Rubber, Datepalm, Grapevine	One year	✓	✓	Four (1 st at closed facility & remaining 3 at open field) at quarterly interval
<i>Lillium</i> , <i>Narcissus</i> , Calla Lilly, <i>Dhalia</i> , <i>Diascorea</i> , <i>Gladiolus</i> , <i>Hyacinthus</i> , Iris	One growth season	✓	X	Two
Strawberry, <i>Heliconia</i> , <i>Musa</i> spp, Olive, Ornamental Palms, Raspberry, Blue/Black berry	Nine to twelve months	✓	✓	Three to four (1 st at closed facility & remaining at open field)



Joint REQ Inspection of Lilly Bulbs at Flowering stage by IA & DoR, TNAU along with PQ Officer at Kotagiri, Niligiris District



Joint PEQ Inspection of Oil palm in open field by IA along with PQ Officer in Andhra Pradesh

Tissue Culture Plants

- ❖ **Import of Tissue Culture plants** which are certified virus free as per Schedule V & VI are not referred to Post-Entry Quarantine
- ❖ but such plants are subjected to inspection at the point of entry & lab testing to ensure that Phytosanitary requirements are met with.
- ❖ **Tissue culture hardened plants** are referred to PEQ as well as per PQ Order, 2003

Introduced Pests:

Coffee rust – *Hemilia vastatrix*



- ▶ Introduced from Sri Lanka
- ▶ In 1879
- ▶ Causes defoliation & reduced yield

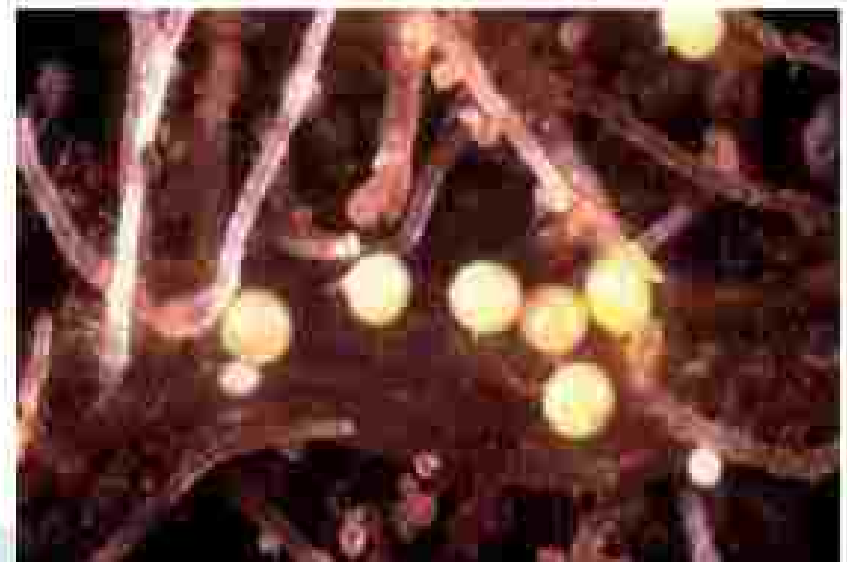
Golden Nematode –

Globodera rostochinensis
Globodera pallida



From **Scotland**

- ▶ In 1961
- ▶ Recorded in Nilgiri Dist. In Tamil Nadu
- ▶ Now spread in Tamil Nadu & Kerala
- ▶ Affects export market
- ▶ Domestic Quarantine is in place



Coffee berry borer – *Hypothenemus hampei*

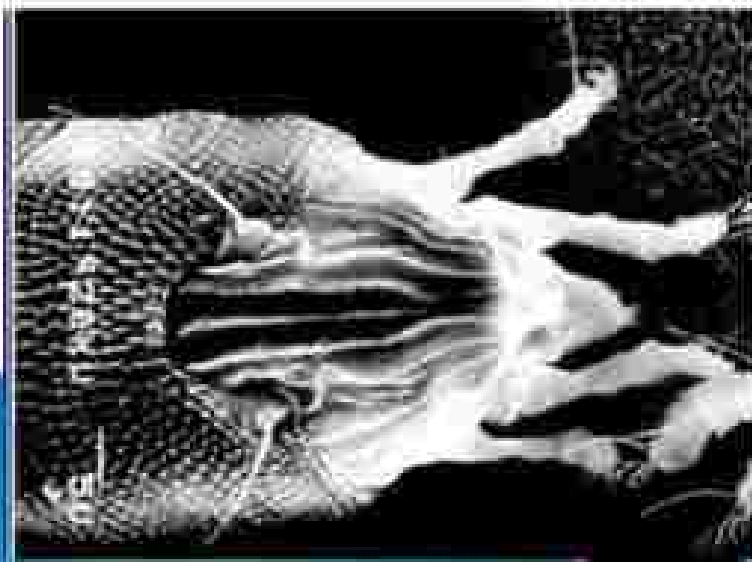
- ▶ From Sri Lanka
Through Coffee beans
in 1990
- ▶ Spread in major coffee
growing areas of Tamil
Nadu, Karnataka,
Kerala
- ▶ Affects quality, export
potential
- ▶ Crores of rupees are
spent on management
each year



Eriophyide mite (Coconut mite) – *Aceria guerreronis*



- ▶ Introduced in 1995 through accompanied baggage along with plant in Kerala
- ▶ No.1 enemy of coconut plantation
- ▶ Farmers spending crores of rupees for its control measures



Coccus viridis –Green Scale



- ▶ Through Coffee beans in 1889
- ▶ From Sri Lanka
- ▶ Recorded from South India (Karnataka, Kerala, Tamil Nadu)



Phthorimaea operculella– Potato tuber moth

- ▶ Through seed potato in 1900
- ▶ From Italy
- ▶ Spread all over India



Eriosoma lanigerum – Woolly Aphid



- ▶ Through Apples in 1909
- ▶ From **England**
- ▶ Initially recorded from Shimla Dist.
- ▶ Now spread all apple growing areas in India

Giant African Snail– *Achatina fulica*

- In 1847
- From **East Africa**
- Through Vegetables
- Major problem in dense forest and moist areas



Plutella exlostella – Diamond back moth

- ▶ Through Crucifers in 1914
- ▶ Origin not known
- ▶ Now spread all over India



Heteropsylla cubana

Subabul Psyllid

- ▶ Through Sububal in 1988
- ▶ From **Sri Lanka**
- ▶ Initially recorded in Tamil Nadu
- ▶ Now wide spread in Tamil Nadu, Karnataka, Maharashtra, Andhra Pradesh, Madhya Pradesh



Cydia pomonella

Codling moth

- ▶ Through Apple fruits in 1989
- ▶ From **Pakistan**
- ▶ Recorded in Ladakh Region of J & K
- ▶ Now spread in Jammu & Kashmir and Himachal Pradesh



Liriomyza trifolii

Serpentine Leaf miner

- ▶ Chrysanthemum cut flowers in 1990
- ▶ Origin not known
- ▶ Initially recorded in Karnataka
- ▶ Now wide spread in Karnataka, Andhra Pradesh, Maharashtra, Gujarat, Delhi, Tamil Nadu



Spiraling Whitefly – *Aleurodicus dispersus*

- Through Cassava in 1993
- From **Sri Lanka**
- Recorded in Kerala
- Now spread in Kerala and Karnataka



Phytophthora infestans– Late blight of Potato

- ▶ Through Potato / Tomato in 1883
- ▶ From Europe
- ▶ Wide spread in Uttar Pradesh, West Bengal, Tamil Nadu, Meghalaya, Himachal Pradesh, Punjab, Assam, Delhi, Haryana, Eastern Hills, North West plains, Orissa, Karnataka



Oidium heveae– Powdery mildew of Rubber



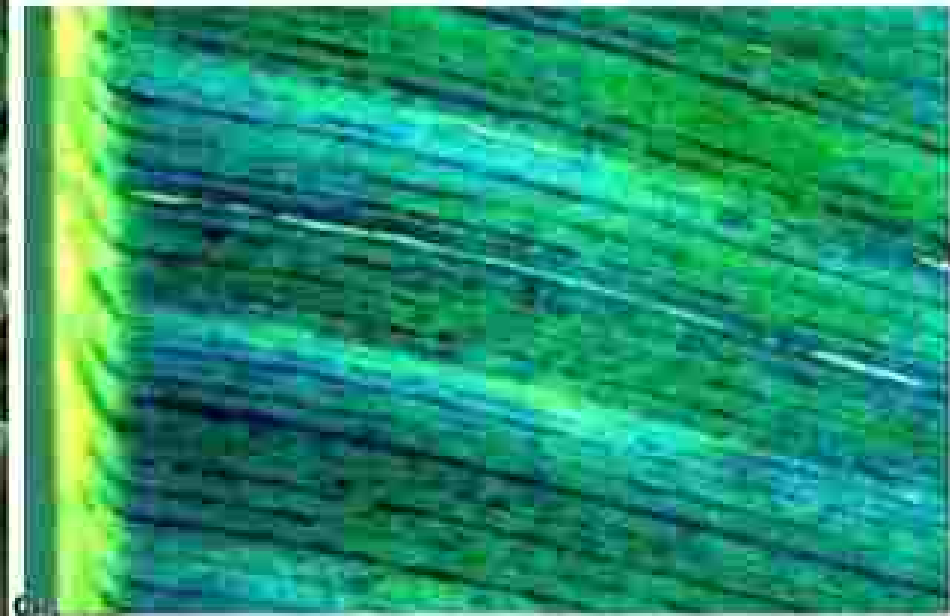
- ▶ Through Rubber in 1938
- ▶ From **Malaysia**
- ▶ Recorded in Kerala
- ▶ Now spread in Kerala, Tamil Nadu, North East India



Banana bunchy top virus

In 1940

- **From Sri Lanka**
- **Now wide spread in Tamil Nadu, Kerala & Assam**
- **Domestic Quarantine is in place**



Crown gall – *Agrobacterium tumefaciens*



- ▶ Through Apple/ Pear plants
- ▶ From **UK** in 1940
- ▶ Wide host range on all dicot plants
- ▶ Initially noticed in Himachal Pradesh
- ▶ Now recorded in Himachal Pradesh & West Bengal



Potato wart –

Synchytrium endobioticum



- ▶ From **Netherlands** in 1953
- ▶ Unfit for consumption
- ▶ Domestic Quarantine is in place

Peanut Stripe virus

In 1985-86

- **Probably introduced through Germplasm material of ICRISAT**
- **Noticed in few pockets in Andhra Pradesh**



Plasmopara halstedii

Sunflower Downy mildew

- ▶ Through Sunflower seeds in 1987
- ▶ From **America**
- ▶ Wide spread in Andhra Pradesh, Maharashtra, Punjab, Madhya Pradesh, Karnataka



Xanthomonas campestris pv. *dieffenbachiae*

Anthurium leaf blight

- ▶ Through Anthurium plants in 1996
- ▶ From **Netherlands**
- ▶ Recorded in Karnataka





Sunflower necrosis (tospo/ ilar) virus

- ▶ First noticed in Serious form in Karnataka in 1997
- ▶ Major problem in Sunflower & Pulses in Maharashtra, Tamil Nadu, Karnataka & Andhra Pradesh



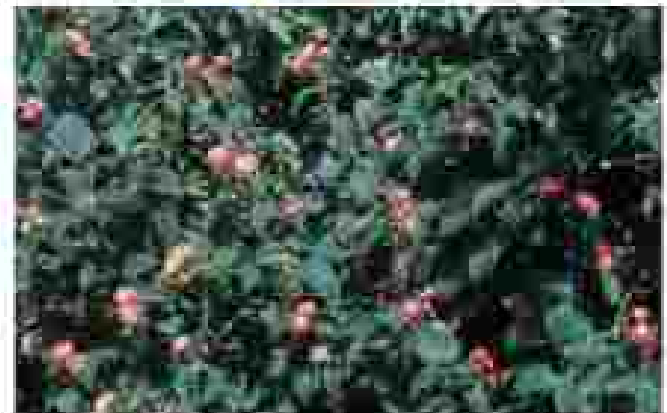
Mexican Poppy – *Argemone mexicana*



- 17th & 18th Century
- From **Mexico & Central America**
- Now spread all over India including
- Seeds resemble very much mustard seeds and grow well along with winter crops.
- The seed contamination with mustard is known to cause **dropsy disease** in human when adulterated mustard oil is consumed

Lantana camara

- In 1809
- From **Central America**
- Through Potato/ or as ornamental garden plant for its varied flowers
- Spread all over India including forests
- Spreads forest fire due to its robust growth and woody stem
- Perceptible seed yield difference is noticed between honey bee cross-pollinated and non-cross pollinated plants like sunflower etc., where the Lantana is known to occur in close vicinity. The honey bees prefer the nectar of Lantana than the other crops, which has resulted in yield loss due to failure of cross-pollination



Prosopis juliflora

- Introduced by British in 1877 in Southern India in Arid tracts From Jamaica as forest wood
- During 1913 in Rajasthan as a systematic plantations, now spread throughout India
- Invades protected forest, pastures land, catchment reservoir
- Allelopathic tree



Water hyacinth – *Eichhornia crassipes*



- ▶ Brought as ornamental in 1914 – 1916
- ▶ From **Brazil**
- ▶ Now spread all over India
- ▶ Chokes lakes, canals
- ▶ Rapid water loss through trans evaporation
- ▶ Affects fish population



Acanthospermum hispidum

Goat's head

- ▶ In 1946
- ▶ From Central & South America
- ▶ Wide spread in Andhra Pradesh, Gujarat, Karnataka, Tamil Nadu



Salvinia molesta

Kariba weed

- ▶ In 1955 – 1958
- ▶ From **East Africa**
- ▶ Recorded in West Bengal
- ▶ Now wide spread in Bihar, Orissa, Assam, Madhya Pradesh, Maharashtra, Kerala, Tamil Nadu, Karnataka



Parthenium weed –

Parthenium hysterophorus

- ▶ From USA in 1960 along with Wheat consignment
- ▶ Major agricultural, municipal weed
- ▶ Affected grazing lands
- ▶ Causes health hazards
- ▶ Acts as a reservoir for necrosis virus in a symptomless manner and as a host of plant thrips spreads the virus to peanuts



Phalaris minor

- ▶ In 1961
- ▶ From **Mexico**
- ▶ Wide spread in Bihar, Delhi, Jammu & Kashmir, Maharashtra, Meghalaya, Uttar Pradesh, West Bengal



Do we need more pests?

Ans: Not at all

Still India is free from:

- ▶ Coconut pests – Lethal yellowing, Cadang cadang viroid, Red ring nematode
- ▶ Coffee Berry disease
- ▶ Rubber SALB – South American Leaf Blight
- ▶ Cotton – American boll weevil
- ▶ Cocoa Swollen shoot virus and pod rot
Phytophthora megakarya
- ▶ Stem & bulb nematode on many bulbs
- ▶ Soybean downy mildew, cyst nematode

We no more wants exotic pests entry in the Country

- ▶ Maize stalk rot
- ▶ Apple fire blight
- ▶ Dwarf bunt of Wheat
- ▶ Fiji disease of Sugarcane
- ▶ Fruit flies on various fruits
- ▶ Many weeds of agricultural importance (57 listed)
- ▶ Many pests affecting forestry plants, wood and timber – to cite a few

Cotton boll weevil



Red haired bark beetle – *Hylurgus ligniperda* on
***Pinus radiata* logs** imported from Costa Rica



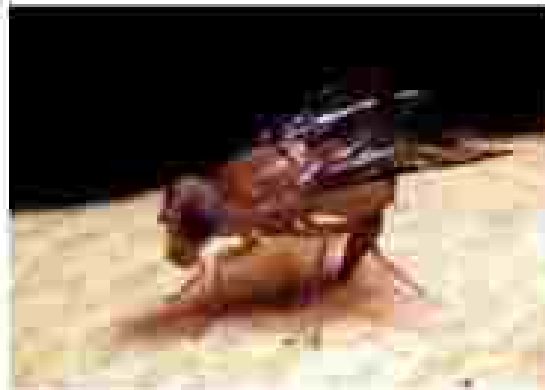
Palm seed weevil - *Caryobruchus gleditsiae*
on seeds of *Sabal uresana* and *Sabal minor* imported
from Germany



**Anastrepha
ludens**



Fruit Flies



**Bactrocera
aquilonis**



Bactrocera jarvisi



**Bactrocera
neohumalis**



Bactrocera papayae



Bactrocera tryoni



Bactrocera tsunonis



Ceratitis capitata



Fire Blight of Apple



Downy mildew of Soybean



Cocoa swollen shoot virus



Cork spot of Apple caused by *Alternaria mali*



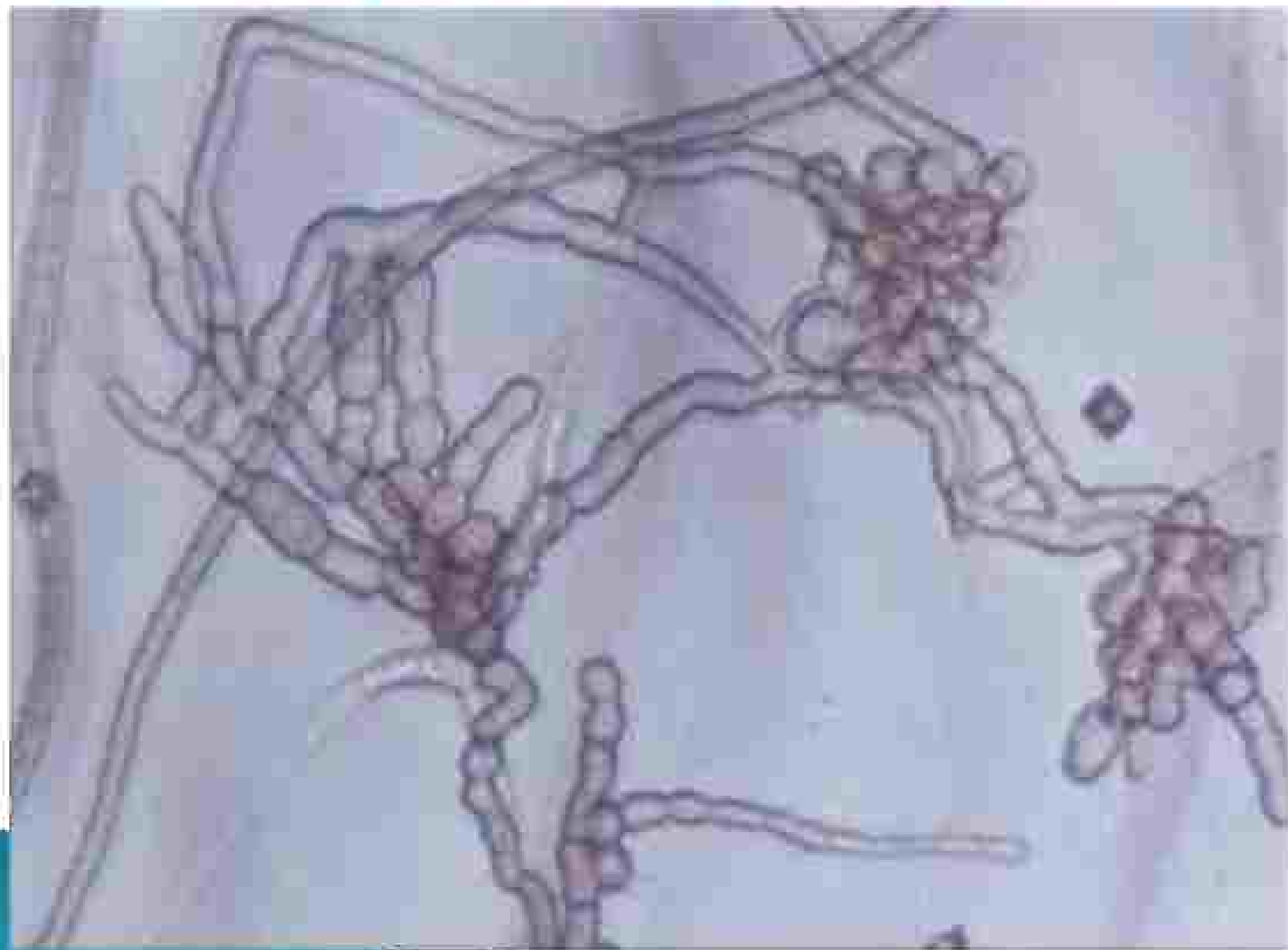
Bacterial blight of Anthurium



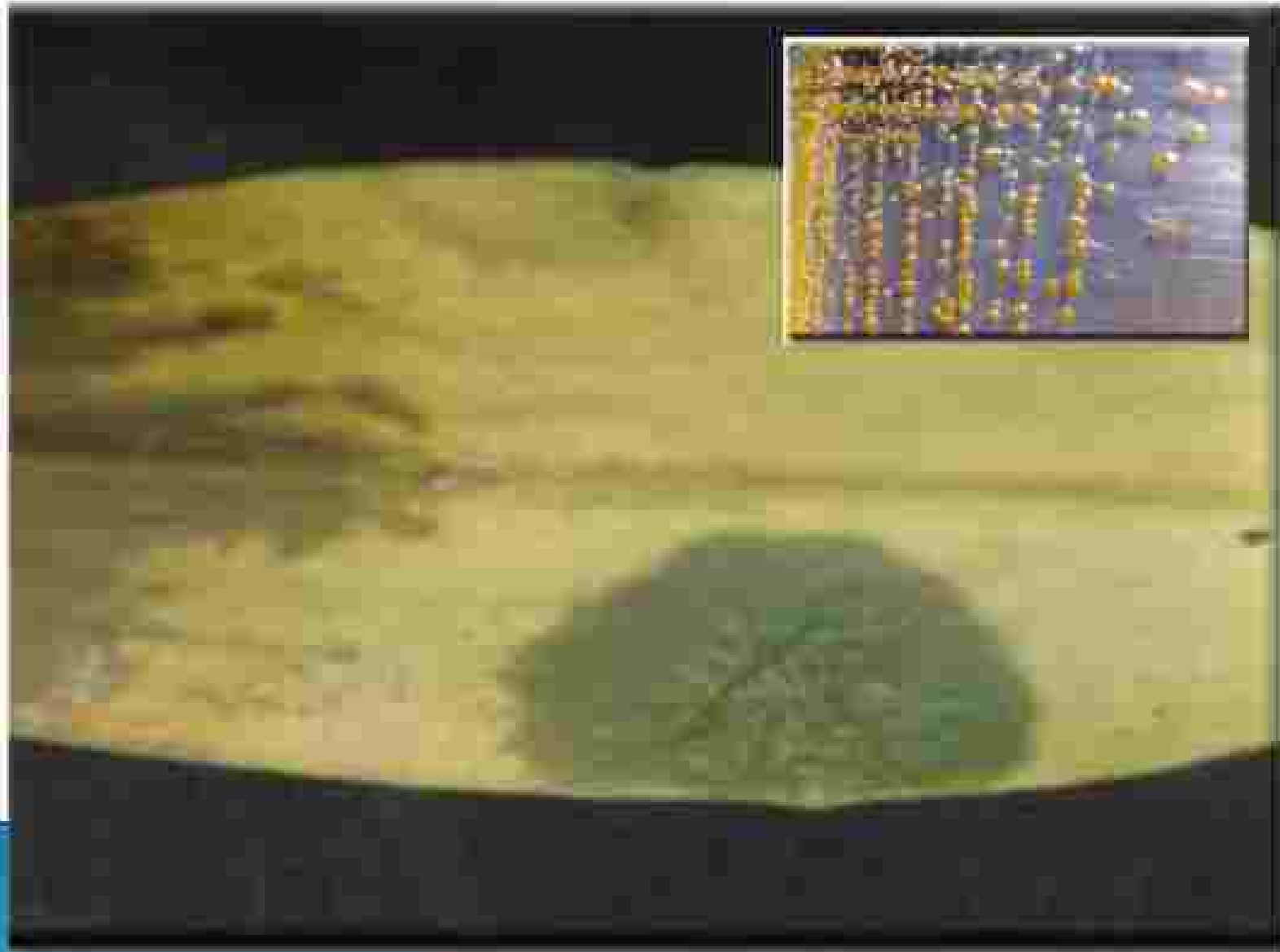
Poty virus of Oilpalm



Phoma betae on beet seeds



Soft rot of Dendrobium

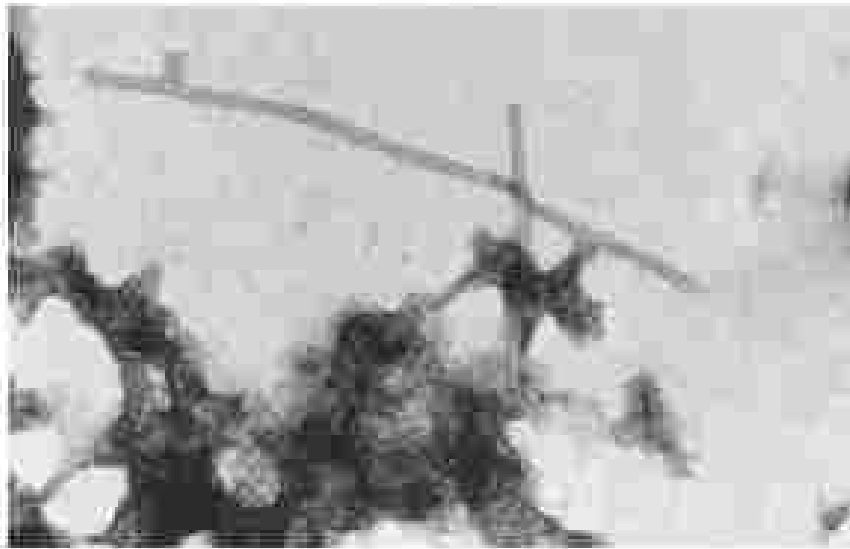


Downy mildew oospores on Soybean seed



Electron Microscopy

Poty Virus from Imported Orchid Plants from Thailand



Xanthium spinosum



Lethal Yellowing of Coconut– Phytoplasma diseases



Coconut red ring nematode



West Indies & Latin America



Cadang cadang viroid



Philippines & Solomon Islands



Moko wilt of Banana

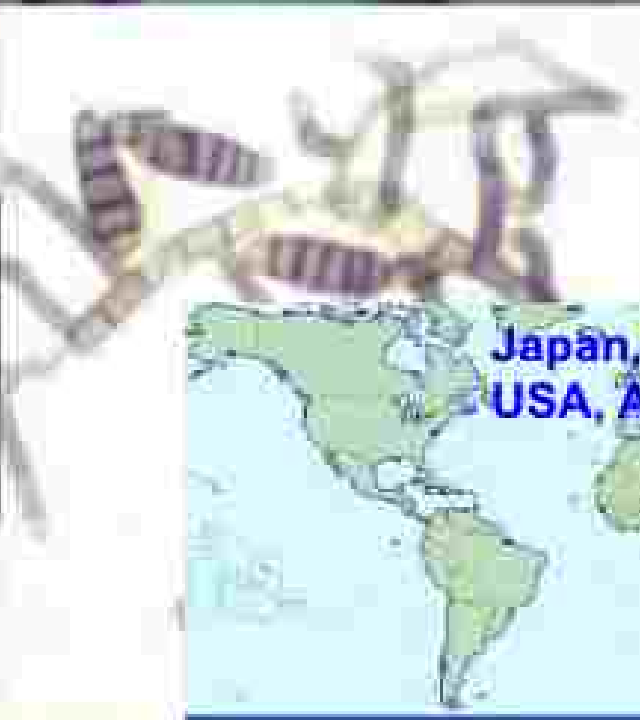
Burkholderia solanacearum Race-2



Dwarf bunt of Wheat



Embellisia allii on Garlic bulbs



Garlic imports from
China stopped on
fungal infection



Japan, China, Korea,
USA, Australia



Weeds

Solanum carolinense
(Horse nettle)



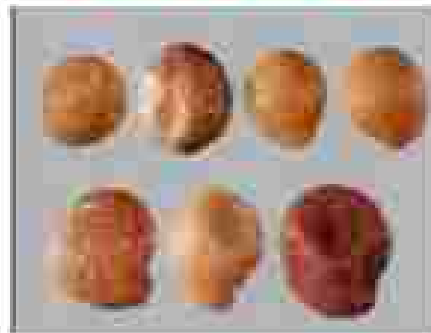
Centaurea maculosa
(Spotted knapweed)



Cuscuta australis
(Australian isinf)



Allium vineale
(Crow garlic)



Cynoglossum officinale
(Hound's tongue)



PQ

- ▶ **Plant Quarantine** is the first line of defense against the entry and possible establishment of exotic plant pests
- ▶ PQ laws & regulations are enforced to safeguard Indian agricultural/ horticultural/ forest plants from exotic/ invasive plant pests

Export Certification

- India is a **signatory member of IPPC** (International Plant Protection Convention) since 1956
- Obligatory on the part of India **to observe safe & pest-free trade of Plants and Plant Products** and carry out **Phytosanitary certification** by the public officers authorized by NPPO (National Plant Protection Organization) i.e. Dte. Of Plant Protection, Quarantine & Storage, DAFW, Min. of Agriculture &FW

ISPMs Related to Phytosanitary Certification

- It is obligatory on the part of signatory countries to comply with IPPC standards
 - **ISPM 7** – Export Certification System
 - **ISPM 12** – Guidelines for Phytosanitary Certificates
 - **ISPM 23** – Guidelines for Inspection

Standards :

1. SOP for Export of **Rice to USA**
2. SOP for Export of **Rice to China**
3. SOP for export **inspection and certification of Vegetables & Fruits** exported to EU Countries
4. NSPM - 23: Guidelines for Phytosanitary Service Agency and Phytosanitary Service Provider for Inspection of Plants Plant Products in Export
5. SOP for Export **Inspection and Phytosanitary Certification of plants / plants products** and other regulated articles
6. NSPM - 24: Guidelines for establishment of **Pest Free Area**
7. SOP for export of **cut flower to Australia**
8. SOP for export of **Peanuts**
9. SOP for export of **Dried Chilli**
10. SOP for export of **Pomegranate Fruits** to Australia
11. SOP for export of **Pomegranate Arils** to Australia
12. SOP for **Pomegranate Arils to USA**

Plant Quarantine procedure (in Export)

Submission of Application (Online)

Scrutiny of Application

Inspection of Consignment

Laboratory testing of Samples

Detection of Insects

Detection of Pathogens (QP)

Detection of Weed seeds (QWS)

Free of Pest (insect / plant Pathogen/Weeds)

Treatment and Degassing

Rejection

Rejection

PSC is issued

PSC is issued

Time line for Plant Quarantine activities for export of plants/plant materials

Activity	Item	Time frame
Phytosanitary Certification	Perishable commodities such as fresh fruits, cut flowers, tissue cultures, etc.,	12-24 hrs
	Plant material for consumption;	1-2 working days except those requiring fumigation will be issued after 3 working days
	Sowing/propagating materials	Minimum of 8-10 days

PLANT PATHOLOGY LAB



Immunology assay

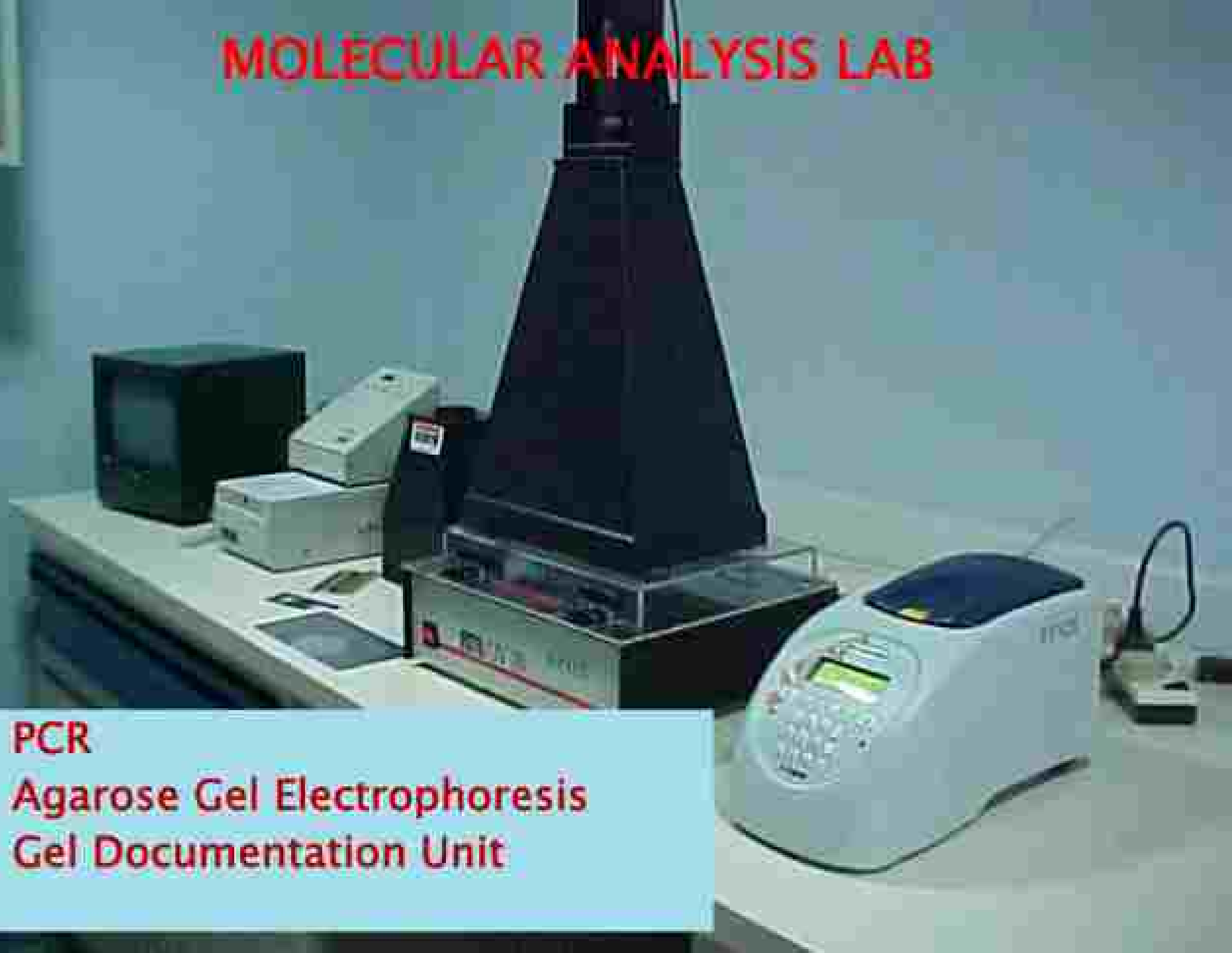


Electron Microscopy



MOLECULAR ANALYSIS LAB

- ▶ PCR
- ▶ Agarose Gel Electrophoresis
- ▶ Gel Documentation Unit



ENTOMOLOGY LAB



NEMATOTOLOGY LAB



WEED SCIENCE LAB



X-RAY LAB



PESTICIDE RESIDUE LAB



REGIONAL PLANT QUARANTINE STATION, CHENNAI



क्षेत्रीय वनस्पति संगरोध केन्द्र, चेन्नई

Digital Achievements 2022-23

- Implementation of PQMS w.e.f. 18.4.2022
- Implementation of Mobile APP w.e.f. 1.11.2022 by PQ Inspectors for Inspection of Agriculture Commodities with Geo-tagging and uploading of Photographs and videos
- Integration with e-Phyto w.e.f. 1.3.2023 in internationally accepted xml format through IPPC hub and acceptance of the same from other countries to facilitate safe exchange of Phytosanitary Certificates between NPPO of India and other NPPOs.



PLANT QUARANTINE MANAGEMENT SYSTEM

DIRECTORATE OF PLANT PROTECTION, QUARANTINE AND STORAGE
DEPARTMENT OF AGRICULTURE & FARMERS WELFARE
MINISTRY OF AGRICULTURE & FARMERS WELFARE, GOVERNMENT OF INDIA

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Plant Quarantine Service

To Sustain crop production by preventing losses due to pest and diseases



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Plant Quarantine Service

To Sustain crop production by preventing losses due to pest and diseases



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- EXPORT
- TREATMENT
- QUARANTINE LAWS
- RELATED LINKS
- FIELD CERTIFICATION



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Official Website
<http://pqms.cgg.gov.in>



सत्यमेव जयते

Government Of India

Thanks for kind attention