

Course : Plant Genetic Resources: Conservation & Sustainable Use

Chapter : 05

Topic: Plant quarantine and Phytosanitary system

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PLANT QUARANTINE

Plant quarantine measures aim at providing protection to the agriculture of a country or region against the likely ravages of alien pests/pathogens should they get introduced and established. These measures are of particular importance and relevance to countries like India whose economy is largely based on agriculture. Quarantine not only helps to ward off the threats of exotic pests, but also aim to eliminate and prevent further spread of pests/pathogens (both indigenous and introduced) with restricted distribution within the country (domestic quarantine).

According to Mathys (1975), 'Government quarantine offers services which are beyond the capabilities of individual beneficiaries or that are difficult to obtain in some other way at a lesser cost'. Thus, plant quarantine, in real sense, serves as a national service by preventing the introduction of exotic pests/pathogens/weeds and their further spread.

Plant quarantine may, therefore, be defined as 'Rules and regulations promulgated by governments to regulate the introduction of plants, planting materials, plant products, soil, living organisms, etc. with a view to prevent inadvertent introduction of exotic pests, weeds and pathogens harmful to the agriculture or the environment of a country/region, and if introduced, to prevent their establishment and further spread'. Plant quarantine is thus designed as a safeguard against harmful pests/pathogens exotic to a country or a region

Or

The method of exclusion of the pests is enforced through certain legal measures commonly known as Quarantine.

Plant quarantine may be defined as the restriction imposed by duly constituted authorities on the production, movement and existence of plants or plant materials, or animals or animal products or any other article or material or normal activity of persons and is brought under regulation in order that the introduction or spread of a pest may be prevented or limited or in order that the pest already introduced may be controlled or to avoid losses that would otherwise occur through the damage done by the pest or through the continuing cost of their control.

Quarantine can be defined “as a legal restriction to prevent the entrance and establishment of a plant disease or insect pest in an area where the pest or disease does not exist”.

The meaning of this term has been broadened, and plant quarantine is now taken to mean all aspects of the regulation of the movement of living plants, living plant parts or plant products between politically defined territories or ecologically distinct parts of them.

Historical events

- The first legal restrictions to hinder the spread of disease were enacted against human disease.
- **1403**- It was the notorious outbreak of bubonic plague, which swept through Europe during the 14th century that led the Venetian Republic to appoint three guardians of public health, to exclude infected and suspected ships and to make the first quarantine of infected areas in 1403.
- The term quarantine has been derived from **latin words** '*quaranta giorni* literally means **40 day period**
- Travellers from the Levant and Egypt, where plague was endemic, were isolated in a detection hospital for 40 days.
- **1660**- a quarantine law was enacted in **Rouen, France**, ordering the eradication of barberry plants from the vicinity of grain fields.
- **1866**-The first British legislation against a disease in animals or plants was an Act of 1866 granting emergency powers for the destruction of all cattle affected by rinderpest which had been introduced into Britain by imported Russian cattle the previous year.
- **1873**-An embargo was passed in Germany to prevent importation of plant and plant products from the US to prevent the introduction of the Colorado potato beetle (*Leptinotarsa decemlineata*) in 1873.
- **1877**- The United Kingdom Destructive Insects Act was passed to prevent the importation of the Colorado beetle.
- **1875**-In North America, the first legislative measures against plant disease were promulgated by states in 1875.
- **1891**- The first plant quarantine measure was initiated in US by setting up a seaport inspection station at San Pedro, California.
- **1912**- The US Congress enacted the Federal Plant Quarantine Act, which among other things, prohibits the entry of plants into the United States.
- **1881**-The first international plant protection convention, the Phylloxera convention was signed at Berne on 3 November 1881 by five countries. This convention remained in force till 1951, when International Plant Protection Convention under

FAO was established at Rome. This agreement was constituted with the purpose of securing common and effective action to prevent the introduction and spread of pests and diseases of plants and plant products.

- **2003**-The PFS order was revised in order to fulfill India's legal obligations under the WTO Agreement and the Plant Quarantine (Regulation of Import into India), 2003 (referred to as PQ order) came into force with effect from January 1, 2004.

Forms of quarantine/The legislative in different countries

Grouped into five classes-

1. **International quarantine**- Legislation to prevent the introduction of new pests and weeds from foreign countries
2. **Domestic quarantine**- Legislation to prevent the spread of already established pests, diseases, and weeds from one part of the country to another.
3. **Farmer's quarantine**-Legislation to enforce farmers to apply effective control measures to prevent damage by already established pests.
4. **Food quarantine**- Legislation to prevent the adulteration and misbranding of insecticides and determine their permissible residue tolerance levels in food stuffs.
5. **Quarantine for pest control operations**-Legislation to regulate the activities of people engaged in pest control operations and application of hazardous insecticides.

Plant Quarantine system in India:

- The awareness to quarantine measures in India started in early 20th century when the **Indian Government in 1906**, ordered compulsory fumigation of imported cotton bales to prevent the introduction of the dreaded Mexican cotton boll weevil (*Antonymous grandis*). On **February 3, 1914** Comprehensive Plant Quarantine Act, known as Destructive Insects and Pests Act, (**DIP Act**) become operative.
- **1946**- The **Directorate of Plant Protection, Quarantine and Storage**, under the ministry of Food and Agriculture were set up. In **1946**, Plant quarantine activity started with the initiation of plant introduction scheme in the Botany Division at Indian Agricultural Research Institute (IARI) New Delhi. In **October 1949**, the Directorate started its quarantine activities at Bombay seaport. On **December 25, 1951** the *first plant Quarantine and Fumigation station in India was formally inaugurated*. In **August, 1976** the National Bureau of Plant Genetic Resource (**NBPGR**) was created. In **1978**, the Division of Plant Quarantine was created with Entomology, Plant Pathology and Nematology sections. In **October, 1988**, the Plants, Fruits and seeds (Regulation of Import into India) order, 1989 popularly known as PFS order came into force.

- Under the DIP act, the **Directorate of Plant Quarantine and Storage (DPPOS), Faridabad, headed by Plant Protection Advisor to the Govt. of India** (under the Department of Agriculture and Cooperation, Ministry of Agriculture) is responsible for enforcing quarantine regulations and also for making rules for quarantine inspection and disinfection of any article or class of articles in respect of which a notification has been issued by the Central Government.
- **Plant Quarantine** regulatory measures are operative through the "**Destructive insects & pests Act, 1914 (Act 2 of 1914)**" in the country. The purpose and intent of this Act is to prevent the introduction of any insect, fungus or other pest, which is or may be destructive to crops. The import of agricultural commodities is presently regulated through the Plant Quarantine (Regulation of Import into India) Order, 2003 issued under DIP Act, 1914 incorporating the provisions of New Policy on Seed Development, 1988. Further, the significance of Plant Quarantine has increased in view of Globalisation and liberalisation in International trade of plants and plant material in the wake of Sanitary and Phytosanitary (SPS) Agreement under WTO. The phytosanitary certification of agricultural commodities being exported is also undertaken through the scheme as per International Plant Protection Convention (IPPC), 1951.
- There are **29 Plant Quarantine Stations** (10 are located at airport, 10 are at seaport and 09 at land route) under DPPOS. The NPQS, New Delhi and RPQs at Chennai, Kolkata, Amritsar and Mumbai have been strengthened with modern equipment for plant quarantine testing, etc., to facilitate speedy clearance of imports and exports under the FAO-UNDP Project.
- National Bureau of Plant Genetic Resources (**NBPR**), **New Delhi**, which is the nodal institution for exchange of plant genetic resources, has been empowered under PQ order to handle quarantine processing of germplasm and transgenic planting material being imported for research purposes in the country.
- As per the recent amendments made under the PQ order, the **ICAR-Advanced Centre for Plant Virology at IARI, New Delhi, ICAR-IIHR, Indian Institute of Horticultural Research, Bangalore** and **CSIR-IHBT, Institute of Himalayan Bio-resource Technology, Palampur** have been identified for ensuring virus-free status in the imported in vitro material.
- **Seed was not covered under the DIP Act until 1984**, when the Govt. of India brought forward a comprehensive '*Plants, Fruits and Seeds (Regulation of Import into India) Order, 1984*' which came into force in June 1985 (Anonymous, 1985). With a view to provide the farmers the best planting materials available in the world for maximising productivity per unit area and to encourage the private seed industry in India not only to meet the internal requirements but also to develop export potential for high quality planting materials, the Government of India announced a 'New Policy on Seed Development' in September 1988. The new policy covers the import of

seeds/planting materials of wheat, paddy, coarse cereals, oilseeds, pulses, vegetables, flowers, ornamentals and fruit crops; procedures for their import and the related plant quarantine procedures/requirements.

The main features of the existing plant quarantine regulations in India are as follows:

1. No consignment of seeds/planting materials shall be imported into India without a valid '**Import Permit**', which is to be issued by a competent authority, to be notified by the Central Government from time to time in the Official Gazette.
2. No consignment of seeds/planting materials shall be imported into India unless accompanied by a '**Phytosanitary Certificate**', issued by the official Plant Quarantine Service of the source country.
3. All consignments of plants and seeds for sowing/propagation/planting purposes shall be imported into India through land customs station, seaport, airport at **Amritsar, Bombay, Calcutta, Delhi and Madras**, and such other entry points as may be specifically notified by the Central Government from time to time, where these shall be inspected and, if necessary, fumigated, disinfested/disinfected by authorised plant quarantine officials, before quarantine clearance.
4. Seeds/planting materials **requiring isolation growing under detention**, shall be grown in **post-entry quarantine facility approved** and certified by the Designated Inspection Authority (**DIA**) to conform to the conditions laid down by the Plant Protection Adviser to the Govt. of India.
5. Hay, straw or any other materials of plant origin shall not be used as packing material.
6. Import of **soil, earth, sand, compost, and plant debris** accompanying seeds/planting materials **shall not be permitted**. However, soil can be imported for research purposes under a special permit issued by the Plant Protection Adviser to the Govt. of India.
7. The *DIP Act* empowers the Central Government to make rules for regulating the import of seeds/planting materials into India and also the movement of the materials from one State to another within the country. **The State Governments** are also empowered to enact rules/regulations to regulate the movement of materials from one region/area to another within a State.

Directorate Of Plant Protection Quarantine & Storage

(Old CGO Complex, NH-IV, Faridabad, Haryana -121001)

Directorate of Plant Protection Quarantine & Storage was established in the year 1946 on the recommendation of Woodhead Commission as an apex organization for advising the Government of India and state governments on all the matter related to Plant Protection. The Directorate is headed by Plant Protection adviser. Plant Protection strategy and activities have significant importance in the overall crop production programmes for sustainable agriculture. Plant protection activities encompasses activities aimed to minimizing crop losses due to pests through

integrated pest management, plant quarantine, regulation of pesticides, locust warning & control and training in desert areas besides training and capacity building in plant protection. It is an attached Office of Ministry of Agriculture and Farmers Welfare

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.
- To ensure availability of safer and effective pesticides through regulatory measures under the Insecticides Act, 1968.
- To prevent introduction of exotic pests inimical to Indian agriculture by implementation of Destructive Insects and Pests Act, 1914 supported by Plant Quarantine Order (Regulation of Import into India), 2003.
- To advise and assist the union government on all matters including international obligations related to plant protection
- To keep watch and control over locust in scheduled desert area.
- Human resource development in plant protection technology.
- Monitoring pesticides' residues at national level.

NBPGR's Quarantine Responsibilities

1. National Bureau of Plant Genetic Resources (NBPGR), New Delhi has been designated as the **national nodal agency** for exchange of germplasm material of **agri-horticultural and agri-silvicultural** crops for research purposes in the country; it has also been entrusted with the quarantine responsibilities in respect to germplasm of these crops.
2. The **Director of NBPGR** has been empowered to issue '**Permits**' for import of seeds/planting materials for research purpose.
3. NBPGR has a separate Division of Plant Quarantine to meet the quarantine requirements in respect of the germplasm materials being exchanged through it. The Division has trained scientific and technical staff representing the disciplines of entomology, nematology and plant pathology, well equipped laboratories, green houses and post-entry isolation growing field facilities to discharge its quarantine responsibilities efficiently.
4. In case of certain crops, after laboratory examination at NBPGR, the exotic material is passed on to the specific crop-based institutes for post-entry isolation growing, before it is released to the indentors. These institutes have established adequate post-entry isolation growing facilities and required expertise is also available with them. These are **CPRI**- Central Potato Research Institute, **Shimla**; **CTCRI**- Central Tuber

Crops Research Institutes, **Trivandrum**; **CTRI**-Central Tobacco Research Institute, **Rajahmundry**; **SBI**-Sugarcane Breeding Institute, **Coimbatore**; and **CPCRI**- Central Plantation Crops Research Institute, **Kasaragod**. NBPGR has established a **RPQS-regional Plant Quarantine Station** at **Hyderabad** to fulfil the quarantine requirements of the International Crops Research Institute for Semi-Arid Tropics (**ICRISAT**), Directorate of Rice Research and other research organisations in the region.

Coordinating system of Quarantine

1. Most of the plant material enters the country as *air cargo or air mail parcels*. Passengers going abroad also bring seed/planting material with them. The New Seed Policy now permits *private enterprises* to introduce more material in certain cases under 'Open General Licence'. Bulk consignments for consumption or sowing are brought by ships, and small research consignments through air freight or post. Therefore, the **customs department, postal department, the International Airport Authority and Port Authority of India are also involved**. Various research institutes under the Indian Council of Agricultural Research (ICAR) and the Council of Scientific & Industrial Research (CSIR) systems, agricultural universities, state departments of agriculture and the private individuals/agencies are the ultimate users of the introduced germplasm material in crop improvement programmes. Very effective linkages among all the government agencies are required so that while the introduced planting material is made available to the user clients without undue delay.
2. The customs department, postal department, the International Airport Authority and Port Authority of India should ensure that the consignments/post-parcels containing seeds/planting materials are cleared promptly and are sent compulsorily to the plant quarantine services. **The consignments should never be released directly to the users**. A 'Plant Quarantine Declaration Card', similar to the 'Customs Declaration Card' should be introduced for passengers travelling to India.
3. Any planting material **declared or ceased by customs department** must be handed over to the **plant quarantine officials for inspection and clearance**. Officials of customs/postal departments should be made aware about the importance of plant quarantine through regular refresher courses. All international airports/sea ports/international post offices should have plant quarantine counters alongwith the customs counters:

PHYTOSANITARY CERTIFICATE

Phytosanitary Certificate is an official document required when shipping regulated articles such as plants, plant products or other regulated articles. A phyto certificate

is an official document that is generated from the exporting country's Department of horticulture, agriculture, food or water resources. It can only be issued by an authorized officer from a government department that is authorized by a National Plant Protection Agency (NPPO). The agency is in force to protect the threat of spreading pests, contamination or diseases into the country of import.

The importer will require a phytosanitary certificate to import regulated articles including commodities such as plants, bulks & tubers or seeds for propagation, fruits & vegetables, cut flowers & branches, grain and growing medium. They may also be required for certain plant products that have been processed and have a potential for introducing regulated pests (examples include cotton or wood). Sometimes they can also be required to cover contaminated articles such as empty shipping containers, vehicles or other organisms. If the shipper can not provide a phytosanitary certificate to the importer, it's highly likely that the goods will not be cleared through customs. The goods may be seized and completely destroyed. Phytosanitary certificates can be in paper form or, where it is accepted by the NPPO of the importing country, in electronic form.

Background

Phytosanitary certification is used to attest that consignments meet phytosanitary import requirements and is applied to most plants, plant products and other regulated articles that are traded internationally. Phytosanitary certification contributes to the protection of plants, including cultivated and uncultivated/unmanaged plants and wild flora (including aquatic plants), habitats and ecosystems in the importing countries. Phytosanitary certification also facilitates international trade in plants, plant products and other regulated articles by providing an internationally agreed document and related procedures.

Article V.2(a) of the IPPC: stipulates how phytosanitary certificates should be issued:

- Inspection and other related activities leading to issuance of phytosanitary certificates shall be carried out only by or under the authority of the official national plant protection organization. The issuance of phytosanitary certificates shall be carried out by public officers who are technically qualified and duly authorized by the official national plant protection organization to act on its behalf and under its control with such knowledge and information available to those officers that the authorities of importing contracting parties may accept the phytosanitary certificates with confidence as dependable documents.
- This was ***clarified at the FAO Conference in 1997*** during adoption of the 1997 revision of the IPPC: "It is understood that ... 'public officers who are technically qualified and duly authorized by the national plant protection organization' include officers from the national plant protection organization". "Public" in this context means employed by a level of government, not by a private company. "Include

officers from the national plant protection organization” means that the officer may be directly employed by the NPPO, but does not have to be directly employed by the NPPO.

Information on Phytosanitary Certificate for Export

No. _____

Each phytosanitary certificate for export should have a unique identification number, which allows for trace-back of consignments, facilitates audits and serves for record-keeping.

Plant Protection Organization of _____

The name of the country issuing the phytosanitary certificate for export should be listed here along with the name of the NPPO.

TO: Plant Protection Organization(s) of _____

The name of the importing country should be listed here. Where a transit country and the importing country have specific phytosanitary requirements that include the need for a phytosanitary certificate for export, the names of both countries should be listed and the transit country should be indicated.

I. Description of Consignment

Name and address of exporter: _____

This information identifies the source of the consignment to facilitate its trace-back and audit by the NPPO of the exporting country. The address of the exporter should be located in the exporting country. The name and address of an exporter’s local agent or shipper should be used where an international company with a foreign address is the exporter.

Declared name and address of consignee: _____

The name and address inserted here should be in sufficient detail to enable the NPPO of the importing country to confirm the identity of the consignee and, where necessary, to be able to conduct trace-back of non-compliant imports. Where the consignee is not known, “To order” may be used if the NPPO of the importing country permits the use of the term and accepts any associated risks. The importing country may require that the address of a consignee be a location in the importing country.

Number and description of packages: _____

The number of packages and their description should be included. Sufficient detail should be included in this section to enable the NPPO of the importing country to link the phytosanitary certificate for export with the corresponding consignment. In some cases (e.g. grain and bulk timber), shipping containers and/or railcars are considered the package and the number may be included (e.g. 10 containers). In cases of bulk shipments, the term “in bulk” may be used.

Distinguishing marks: _____

Distinguishing marks on packages (e.g. lot numbers, serial numbers or brand names) and conveyance identification numbers or names (e.g. container and railcar identification numbers or vessel name in the case of bulk shipments) should be included if necessary for the identification of the consignment.

Place of origin: _____

The place of origin refers to places where the commodity was grown or produced and where it was possibly exposed to infestation or contamination by regulated pests. In all cases, the name of the country or countries of origin should be stated. Normally a consignment gains its phytosanitary status from the place of origin. Countries may require that the name or code of the pest free area, pest free place of production or pest free production site be identified. If different lots within a consignment originate in different places or countries, all countries and places where necessary should be indicated.

Declared means of conveyance: _____

This section refers to how the commodity is transported when leaving the certifying country. Terms such as “ocean vessel”, “boat”, “aircraft”, “road”, “truck”, “rail”, “mail” and “carried by hand” may be used. The ship’s name and voyage number or the aircraft’s flight number may be included if known.

Declared point of entry: _____

This should be the first point of arrival in the country of destination, or if not known, the country name.

Name of produce and quantity declared: _____

This section should be sufficiently descriptive of the commodity and should include the name of the plant, plant product or other regulated article, unit and the quantity as accurately as possible to enable the NPPO of the importing country to verify the contents of the consignment. Entries should not refer to trade names, sizes or other commercial terms.

Botanical name of plants: _____

The information inserted here should identify plants and plant products using accepted scientific names, at least to genus level but preferably to species level.

Certifying statement

This is to certify that the plants, plant products or other regulated articles described herein have been inspected and/or tested according to appropriate official procedures and are considered to be free from the quarantine pests specified by the importing contracting party and to conform with the current phytosanitary requirements of the importing contracting party, including those for regulated non-quarantine pests.

Specimen certificate

Name and address of exporter			No.		
Declared name and address of consignee			PHYTOSANITARY CERTIFICATE		
			Place of origin		Code
			Country of final destination		Code
			To: Plant Protection Organisation of		
Declared means of conveyance		Declared point of entry		Import permit number	
Distinguishing marks and container numbers	Number and description of packages	Name of produce/ quantity declared	Botanical name of plants	Commodity code	
				Number of packages (total)	Mass (total)
This is to certify that the plants, plant products or other regulated articles described herein have been inspected and/or tested according to appropriate official procedures and are considered to be free from the quarantine pests specified by the importing contracting party and to conform with the current phytosanitary requirements of the importing contracting party, including those for regulated non-quarantine pests.					
DISINFESTATION AND/OR DISINFECTION TREATMENT					
Date		Treatment		Chemical (active ingredient)	
Concentration					
Duration and temperature		Additional information			
Additional declaration					
Place of issue		Code		Date of issue	
Name of inspector		Inspection date		Code	
Name of authorised officer		Signature of an officer of the Department			
Stamp					

(Note this document will vary with different government departments)

Sources

PFS ORDER, 1989[The Plants, Fruits and Seeds (Regulation of Import into India) Order, 1989]

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