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Legislative/Regulatory Method in Integrated Pest and Disease Management

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Abstract
Legislative control plays a pivotal role in Integrated Pest and Disease Management (IPDM), providing a framework of laws and regulations designed to prevent and mitigate the impact of pests and diseases on agriculture, the environment, and public health. Key components include quarantine measures to restrict the movement of potentially infested goods, stringent pesticide regulations to ensure safe and effective usage, and international agreements facilitating cooperation and standardization across borders. Effective legislative control requires robust enforcement, adaptability to changing environmental conditions, and a balance between trade and biosecurity. Through case studies such as the management of the Mediterranean fruit fly in California and the European Union's regulations on neonicotinoids, the importance of legislative measures in safeguarding agricultural sustainability is highlighted. Future directions emphasize the need for enhanced surveillance, global harmonization of standards, and increased public awareness. Legislative control remains essential in the evolving landscape of pest and disease management, ensuring a comprehensive and sustainable approach to protecting agricultural systems.

Introduction
Integrated Pest and Disease Management (IPDM) represents a comprehensive strategy aimed at controlling pests and diseases in agriculture through the integration of multiple management practices. This approach seeks to minimize the reliance on chemical pesticides, thereby reducing environmental harm and promoting sustainable agricultural practices. One of the critical components of IPDM is legislative control, which involves the formulation and enforcement of laws and regulations designed to prevent the introduction and spread of harmful pests and diseases.

Legislative control is essential in creating a regulatory framework that supports the implementation of IPDM strategies. By establishing quarantine measures, regulating the use of pesticides, and facilitating international cooperation through agreements, legislative control helps maintain the integrity of agricultural ecosystems and ensures food security. This introduction explores the significance of legislative control within the broader context of IPDM, highlighting its role in safeguarding agricultural production and public health. By examining various aspects of legislative control, this discussion will underscore its necessity and effectiveness in achieving sustainable pest and disease management.

Legislative control and list its categories
As Legislative control involves the enactment of laws to regulate the entry, establishment and spread of pests. Legislation is of various kinds.

- Legislation for foreign quarantine to prevent the introduction of new pests.

- Legislation for domestic quarantine to prevent the spread of established pests within the country or within a particular state.
- Legislation for notified campaigns of control against pests.
- Legislation to prevent the adulteration and mishandling of insecticides or other devices used for control of pests.
- Legislation to regulate the activities of pest control operations and the application of hazardous insecticides.

First legislation passed in India

The first Act in India was passed in 1906 under the Sea Customs Act of 1878 to stop the entry of the Mexican cotton bollweevil.

Destructive Insects and Pests (DIP) Act, 1914

The **Destructive Insects and Pests** (DIP) Act, 1914 was passed on February 3, 1914, with the following rules:

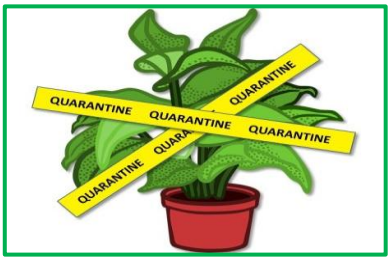
- Prohibiting or restricting the import of plants and plant materials, insects and fungi into India.
- Prohibiting or restricting the movement of insects or diseases and their hosts from one state to another in India.

Quarantine pest

A quarantine pest is that which is of potential economic importance to the area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled. These pests are introduced and distributed in clean areas due to unchecked movement of infected/infested! Contaminated plant material from one country to another, as on their own. These pests are incapable of travelling long distances and across natural barriers. This definition is established by the **International Plant Protection Convention** (IPPC) and is integral to international standards for phytosanitary measures.

Plant Quarantine

Plant quarantine refers to the legal restrictions to prevent the entrance and establishment of a plant disease or insect pest in an area where the disease or pest does not exist. In India, plant quarantine is regulated under the Destructive Insects and Pests Act, 1914.



Various Methods of Plant Quarantine

- **Inspection at point of destination.** This inspection is necessary because many insect pests can be discovered and their accidental introduction may be eliminated.
- **Inspection at the point of origin.** In this case, materials are allowed to enter the state or the country as the case may be, provided they bear a certificate issued by the plant quarantine officer that the materials have been inspected and found to be free from insect infestation or plant disease infection
- **Embargoes.** By this we mean the exclusion of all plant materials or commodities which are classed as hosts of the insects
- **Controlled Introduction.** This consists of allowing the importation of only a very limited amount of material for propagating purposes, obtaining it from pest or disease free areas and from plants believed to be insect or disease free.

What is a phytosanitary certificate ?

The certificate issued to the consignments by the officers of the exporting country or state, as to their being free from pests and diseases is called phytosanitary certificate.

Name of the institutions which are exempted from phytosanitary restrictions

(i) Indian Agricultural Research Institute, New Delhi.
(ii) Forest Research Institute, Dehra Dun
(iii) Indian Veterinary Research Institute, Mukteshwar
(iv) Zoological Survey of India, Calcutta.
(v) National Bureau of Agriculturally Important Insects, Bangalore.

Main Commodities Which Have Been Totally Banned for Import

- Unginned cotton
- Potato tubers
- Onion
- Garlic
- Raw tobacco
- American cotton (unfumigated)
- Sugarcane setts
- Mexican jumping beans
- Berseem seed
- Sunflower seed

The Commodities for which Domestic Quarantines Enforced in India

In India, the provisions were made to restrict the spread of San Jose scale, *Quadraspidiotus perniciosus* (Comstock); cottony- cusion scale, *Icerya pruchasi* Maskell; potato wart disease, water hyacinth, lantana, spike disease of sandal tree and bunchy top of banana.

Name the insects which had entered India before the enforcement of quarantine measures

(i) Cottony cushion scale, ***Icerya purchasi*** Maskell. It is a pest of citrus and introduced from Australia.
(ii) San Jose scale, ***Quadraspidiotus perniciosus*** (Comstock). It is a pest of apple and introduced from China.
(iii) Woolly apple aphid**,** ***Eriosoma lanigerum*** (Hausmann). It is a pest of apple and entered from European countries.

Name the foreign pests, of which India is free from infestation

The foreign pests which have not yet been introduced in India are the Mediterranean fruit fly, *Ceratis capitata* (Wiedemann); grape phylloxera, *Daktulosphaira vitifoliae* (Fitch) and Mexican cotton boll weevil, *Anthonomus grandis* Boheman. The codling moth, *Cydia pomonella* (Linnaeus) is restricted to Ladakh region of Jammu & Kashmir.

When was the Insecticides Act amended ?

The Insecticides Act, 1968 was amended in 1972 and 1977 to overcome teething troubles in the implementation of the Act. The Act was further amended on August 8, 2000 to overcome several practical difficulties experienced during administration and implementation of the Act during last three decades

The Specific Objectives of the Insecticides Act, 1968

- To register only safe and efficacious pesticides.
- To ensure that the farmers/users get quality products for controlling pests.

- To prescribe usages of pesticides both from ground and air, and also important precautions for their handling and use.
- To minimize health hazards from the pesticide residues through contaminated food, water and air.
- To ensure that the pesticide industry manufacture, transport, distribute, store and sell the pesticides as per the prescribed regulations, failing which legal action is taken
- To ensure that the pesticides are properly packed and labelled to avoid any leakage of the hazardous pesticides in transit and to provide enough instructions for their safe handling and use.

Function of the Central Insecticides Board

The Central Insecticides Board advises the Central and State Governments on al technical matters such as manufacture, formulation, storage, transport distribution, sale and safe use of pesticides

The Function of the Registration Committee

The Registration Committee is responsible for according approval and registration of all pesticides, before these could be sold. The registration is done after scrutinizing the structure, efficacy and safety of pesticides to human beings and animals.

The Functions of the Central Insecticides Laboratory

Under the provision of the Insecticides Act, 1968, the Government of India has set up a Central Insecticides Laboratory with the following functions:

- To analyse the samples of pesticides sent by any officer or authority of the Central or State Government.
- To analyse samples of materials for pesticide residues.
- To carry out such investigations as may be necessary for ensuring the conditions of the registration of insecticides.
- To determine the efficacy and toxicity of insecticides.

Significance of Prevention of Food Adulteration Act, 1954

The Prevention of Food Adulteration (PFA) Act, 1954 was enacted on September 24, 1954, for prevention of adulteration of food. According to PFA Rules, 1955,

(i) restrictions on sale of insecticides by the persons manufacturing/storing/selling food are imposed;

(ii) tolerance limits for pesticides in different articles of food are fixed based on use pattern, dietary habits and nutritional status of our population. The tolerance limits for 71 pesticides have been notified so far in India

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