

# *How to Regulate the Export, Import, and Release of Beneficial Organisms & Biological Control Agents*

**Dr. Sharad B Sable\***

*Department of Plant Pathology and Agril. Microbiology, MPKV, Rahuri-413 722, M.S. (India)*

**Corresponding Author**

Dr. Sharad B Sable

Email: sharadsable1990@gmail.com



**OPEN ACCESS**

**Keywords**

Export, Import, Biological Control, Quarantine

*How to cite this article:*

Sable, S. B. 2024. How to Regulate the Export, Import, and Release of Beneficial Organisms & Biological Control Agents. *Vigyan Varta* 5(5): 130-134.

## **ABSTRACT**

This article describes to export, import and release of biological control agents (e.g., parasitoids, predators, parasites and pathogens (nematodes, fungi, bacteria and viruses)) and other beneficial organisms both for research and commercial use. The exporter must ensure that the consignment of biological control agents and beneficial organisms exported are complied with regulations of importing country; is securely packed and appropriately labeled before export; provide appropriate documentation related to the export of specific biological control agents and beneficial organisms and relevant information to facilitate carrying out pest risk analysis. The importer must ensure to provide appropriate documentation and relevant information related to the import of specific biological control agents and beneficial organisms, ensure timely referring imported consignments for quarantine inspection, and where required establish appropriate containment facilities as per guidelines prescribed by the Department of Agriculture & Cooperation.

## **INTRODUCTION**

**B**iocontrol agents are the organisms or microorganisms that control the plant pathogen. They play a key role

in resisting pest population and preventing the crop from various diseases like leaf wilt, curling of disease, root rot disease, crown gall

disease, etc. They kill the pest population before they spread the disease. Biocontrol agents are used at large scales as they do not cause any harm to the main crop and kill the pest population naturally. Many bacteria (*Bacillus* sp., *Pseudomonas* sp., etc.) and fungi (*Trichoderma* sp., *Candida* sp. etc.) are used as biocontrol agents. The major benefit of these biocontrol agents is that the hosts do not consume them, and thus host organism remains unaffected (Savita and Anuradha, 2019). Fertilizers and pesticides are used to prevent the crop from various pests. These pesticides and chemical fertilizers effectively increase the crop yield, but it also shows a negative impact on human health and atmosphere.

## OUTLINE OF REQUIREMENTS

Pest risk analysis is mandatory done by Directorate of Plant Protection, Quarantine & Storage, to intend import of biological control agents and beneficial organisms before allowing the import and before recommending for inundative release; ensure to hold them under containment facilities, while under quarantine testing before granting clearance for release into the environment; and maintain appropriate records relevant to import and release of biological control agents and beneficial organisms. The NPPO of the exporting country should ensure that the regulations of importing country are complied with, while certifying for exports; and provide appropriate documentation requirements relevant to the export inspection, certification and shipment. The exporter must ensure that the consignment of biological control agents and beneficial organisms exported are complied with regulations of importing country; securely packed and appropriately labeled prior to export; providing appropriate documentation related to export of specific biological control agents and beneficial organisms and relevant information to

facilitate carrying out pest risk analysis. The importer must ensure to provide appropriate documentation and relevant information related to import of specific biological control agents and beneficial organisms, ensure timely referring imported consignments for quarantine inspection and where required establish appropriate containment facilities as per guidelines prescribed by the Department of Agriculture & Cooperation.

## GENERAL REQUIREMENTS

### Designation of Authority and Regulatory Requirements

The issuing authority is the Directorate of Plant Protection, Quarantine & Storage (Dte of PPQS), established under the Department of Agriculture & Cooperation of the Ministry of Agriculture has been mandated with the responsibility of implementing the regulations relating to the import of biological control agents or other beneficial organisms both for scientific research & commercial use. The import of insects, microbial cultures including mushrooms and algae or biological control agents is regulated by 'The Plant Quarantine (Regulation of Import into India) Order, 2003 issued under the Destructive Insects & Pests Act, 1914 and amendments issued thereunder. As per the provision of clause 7 (1) of the above-mentioned Order, no import of insects or microbial cultures including mushrooms and algae or biological control agents shall be permitted without a valid permit issued by the Plant Protection Adviser.

### Responsibilities of Exporter

1. All conditions specified in the regulations of the importing country or on the import permit are complied with; consignments, upon export, are accompanied by appropriate documentation, the sterile insects have been irradiated with the required minimum absorbed dose suitable

for sterile insect technique (SIT) purposes and appropriately marked to recognize from natural population;

2. Exporters of biological control agents or other beneficial organisms for commercial purpose or inundative release further should: take all necessary steps to ensure that exported biological control agents or other beneficial organisms conform to import regulations specified and to relevant international agreements; provide documentation on measures undertaken to ensure that acceptable levels of contaminating organism(s) are not exceeded.

### **Responsibilities of Importer**

Before the first importation, the importer of biological control agents or other beneficial organisms for any purpose should prepare documentation for submission to the Dte of PPQS, with the information on the targeted pest (s) to be controlled, including accurate identification of the target pest (s), its world distribution and probable origin, its known biology and ecology; assessment of its economic importance and environmental impact; consideration of possible benefits of the target and conflicting interests surrounding its use; its known natural enemies, antagonists and other biological control agents or competitors already present or used in the proposed release area or other parts of the world.

Prior to first importation, the importer of biological control agents or beneficial organisms for any purpose should coordinate with the exporter to prepare documentation with information for submission to the Dte of PPQS on candidate biological control agent or beneficial organism including: accurate identification or, if not available, sufficient characterization of the biological control agent

or beneficial organism to allow its unambiguous recognition; a summary of all available information on its origin, distribution, biology, natural enemies and impact in its area of distribution; available information on host specificity of the biological control agent or beneficial organism and any potential hazards posed to non-target hosts; description of natural enemies or contaminants of the agent and procedures required for their elimination from laboratory colonies including, if appropriate, procedures to identify accurately and, if necessary, eliminate from the culture the host upon which the biological control agent or beneficial organism was cultured. Information on any measures taken prior to shipment should also be provided;

Prior to first importation, the importer of biological control agents or beneficial organisms, for any purpose, should also prepare documentation for presentation to the relevant authority that: identifies potential hazards and analyses the risks posed, such as for those who may be handling biological control agents or beneficial organisms under laboratory, production and field conditions; documents emergency actions or procedures, should the biological control agent or beneficial organism display unexpected adverse properties.

On importation, the importer of biological control agents or other beneficial organisms should: ensure to file an application with the PQ officer at the concerned point of entry for quarantine inspection and clearance in form PQ 16 along with a copy of the attached documents.

### **Requirements of Import Risk Analysis**

Where appropriate, pest risk assessment should be undertaken prior to release (see section 14), in accordance with ISPM No. 2 (Guidelines for pest risk analysis) and/or stage

2 of ISPM No. 11 (Pest risk analysis for quarantine pests including analysis of environmental risks and living modified organisms, 2004) as considered appropriate. However, in respect of import of biocontrol agents and beneficial organisms intended for scientific research and evaluation shall only be permitted after undertaking full PRA in accordance with ISPM No.11, (Pest risk analysis for quarantine pests including analysis of environmental risks and living modified organisms, 2004) will be completed prior to release.

### Specific Requirements

#### Export Requirements

##### 1. Inspection & certification prior to shipment

The NPPO or any responsible authority at the country of origin or export should inspect the consignment of biological agents or beneficial organisms prior to shipment to ensure free from natural enemies or acceptable levels of contaminants and issue appropriate certificates. Such inspection should include verification of documentation and regulatory requirements of the importing country and laboratory testing.

##### 2. Shipment/labeling Requirements

The consignment of biological control agents or beneficial organisms should be securely packed to prevent any escape and appropriately labeled indicating the common/scientific name of the organism, taxon, life stage of the organism, and host species, if any. The package should carry out an appropriate declaration to the effect that the imported organism is not a living modified organism or a biopesticide requiring product registration or biological control agent for controlling vertebrate pests.

#### Import Requirements

##### 1. Inspection at the point of entry

All the consignments of biological control agents or other beneficial organisms upon import at the concerned point of entry should be referred for inspection at a specified quarantine facility.

##### 2. Quarantine clearance

The PQ officer at the concerned point of entry should allow certain biological control agents or beneficial organisms to be granted quarantine clearance directly for release, if appropriate, and provided that all conditions have been complied with (see section 1.4) and required documentary evidence is made available (section 1.7).

##### 3. Notification of Non-compliance

The Dte of PPQS shall promptly inform the concerned/appropriate authority in the event of detection of the presence of natural enemies or should the biological control agent or beneficial organism display unexpected adverse properties or contaminants exceeding the level of acceptance or the regulations of the importing country not met with.

#### Requirements of Field Release & Certification

##### 1. Limited/Experimental trials

Where import of biological control agents or beneficial organisms is made for the first time, the Dte of PPQS may grant permission for carrying out evaluation studies under confinement or in isolated fields. After evaluating the performance of limited/experimental trials, the Dte of PPQS may grant permission for inundative release. PPA may consult the technical panel before granting permission for inundative release

## 2. Monitoring and evaluation

The Dte of PPQS shall ensure the monitoring of the release of biological control agents or beneficial organisms in order to assess the impact on the target and non-target organisms. Where appropriate, it should include a marking system to facilitate recognition of the biological control agent (e.g. sterile insects) or beneficial organism in contrast to the wild organism.

## 3. Certification of Release

The Dte of PPQS shall perform, manage, supervise or, at minimum, audit or review any official requirements related to the release of biological control agents or beneficial organisms, e.g. requirements related to release only in specific areas in consultation with a technical panel established for the said purpose.

## CONCLUSION

1. Pest risk analysis is mandatory done by the Directorate of Plant Protection, Quarantine & Storage, to intend the import of biological control agents and beneficial organisms prior to allowing the import and before recommending for inundative release
2. All conditions specified in the regulations of the importing country or on the import permit are complied with; consignments, upon export, are accompanied by appropriate documentation, the sterile insects have been irradiated with the

required minimum absorbed dose suitable for sterile insect technique (SIT) purposes and appropriately marked to recognize from natural population

3. Prior to the first importation, the importer of biological control agents or other beneficial organisms for any purpose should prepare documentation for submission to the Dte of PPQS

## REFERENCES

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