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Plant quarantine for biosecurity during transboundary movement of plant genetic resources

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Abstract

International exchange of plants/planting material carries an unintended risk of introduction of exotic pests or their new virulent races/strains into new areas. History has evidenced several examples of dangerous pests introduced along with plants/planting material/plant products that have led to serious socio-economic consequences. Plant quarantine is a statutory requirement to regulate the entry of seed/planting material, plant products, living organisms and soil etc. so as to prevent unintentional entry of pests and pathogens. International exchange of plant genetic resources (PGR) is important to broaden the genetic base of crops in order to develop improved crop varieties. The Government of India has legislated the Plant Quarantine (Regulation of Import into India) Order in 2003 to regulate the import of plant material. Under this Order, ICAR-National Bureau of Plant Genetic Resources (ICAR-NBPGR) has been delegated powers to issue Import Permit and to carry out quarantine processing of imported PGR including transgenics and for issue of Phytosanitary Certificate for PGR meant for export. The Division of Plant Quarantine at ICAR-NBPGR, New Delhi has developed an efficient and step-by-step protocol for quarantine processing for pest diagnostics, salvaging and containment to uphold biosecurity during exchange of PGR and to be transparent during exchange internationally. Meticulous quarantine examination of 5,45,945 samples of PGR during 2015–2020 has resulted in interception of several insect pests, fungi, bacteria, viruses, nematodes and weeds. Some of these are yet not reported from India, if reported, have a restricted distribution; have an extensive host range and/or cause huge economic losses or have more infectious/several races/strains etc. All infested/infected/contaminated samples are either disinfested/disinfested prior to release or incinerated depending on the type of pest intercepted. During the past five years from 2015 to 2020, a total of 36 pests of quarantine significance including insects/mites (7), fungi (8), viruses (13) and weeds (28) were intercepted at ICAR-NBPGR, New Delhi. Had any of these pests not been intercepted and had escaped, they could have entered and established in the country and subsequently caused devastation to our agriculture. Presently,

exchange of PGR has become more difficult under the Convention on Biological Diversity, hence, all attempts were made to salvage the germplasm and 7393 samples were salvaged and 2813 samples were rejected. Although, ICAR-NBPGR has contemporary facilities to properly take up this task, more wide-ranging efforts are needed in the national plant quarantine system to develop adapt and adopt latest detection and eco-friendly disinfection/disinfestation techniques to minimize the risk of pest escape in quarantine. Additionally, the legislation on quarantine needs to be upgraded to the Agricultural Biosecurity Bill as drafted by the Ministry of Agriculture and Farmers Welfare, Government of India to have an all-inclusive approach towards biosecurity in India.

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Ethics declarations

Conflict of interest

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