

Improved Quarantine System is Required in Modern Societies

Ricardo Labrada*

Ex-FAO Technical Officer, Plant Protection Service, Rome, Italy

***Corresponding Author:** Ricardo Labrada, Ex-FAO Technical Officer, Plant Protection Service, Rome, Italy.

Received: April 27, 2020; **Published:** May 14, 2020

Abstract

Present intensive trade worldwide compels countries to establish or to improve quarantine of alien organisms. Such a system comprises risk assessment, inspection at borders and field monitoring. Governments should prioritize these activities as one of the ways to protect food and animal production, as well as human health, while international aid agencies provide necessary assistance to developing countries to this aim.

Keywords: *Quarantine System; Modern Societies; Human Health*

Introduction

At present one fourth of total global production is exported, generating gains but also other consequences [1]. Trade has been growing remarkably during the last decades after II World War. Exports today are more than 40 times larger than in 1913.

Trade of goods, which affect agricultural and animal production, and human health, brings about the spread of alien invasive organisms. Their impacts are second only to habitat destruction in terms of loss of biodiversity [2]. Available estimations indicate that only alien arthropods cause economic losses of approximately 10 billion EUR in the EU [3], while alien pests cause serious impacts in the agriculture and forest worldwide [4]. Invasive alien organisms across physical and political boundaries threatens food and health security and creates a global public concern across all countries.

The prevention of entry and spread of alien organisms is only possible through strong restrictive actions well supported by data and scientific evidence. This preventive system, known as quarantine, comprised several steps, usually ignored or unknown. Only a few countries in the world may claim to have sound quarantine services with accomplishment of all these steps accordingly. In addition, there is a wrong belief that quarantine is a system only feasible in islands, i.e. territories surrounded by sea and with no terrestrial borders with other countries. Life is demonstrating how wrong this idea is.

Comprehensive quarantine system

Quarantine is a process that includes different steps, which practically support each other, and ultimately results in their continuous improvement (Figure 1). It includes several steps as risk assessment, inspection at the borders, monitoring and detection in the field, and according to the organism spread, implementation of eradication, containment or permanent control measures. Unfortunately, several developing countries neither have a strong law to prevent the entry of alien organisms nor even a single inspector at airports or ports

for controlling the safety of the imported goods. The same is applicable to European countries, usually affected by purposed introduction of alien organisms, e.g. parrots, raccoons, American minks or water hyacinth in Spain among others [5], which entered with no control. About 11,000 alien species have established themselves in the European ecosystems [6]. Undesirable invasive organisms may cross a series of barriers to reach a new area and spread within it when they come in imported shipments. Not all invaders are able to overcome a range of biotic and abiotic factors for its establishment. Therefore, the risk assessment should be able to identify those capable to become real invaders in new habitat.

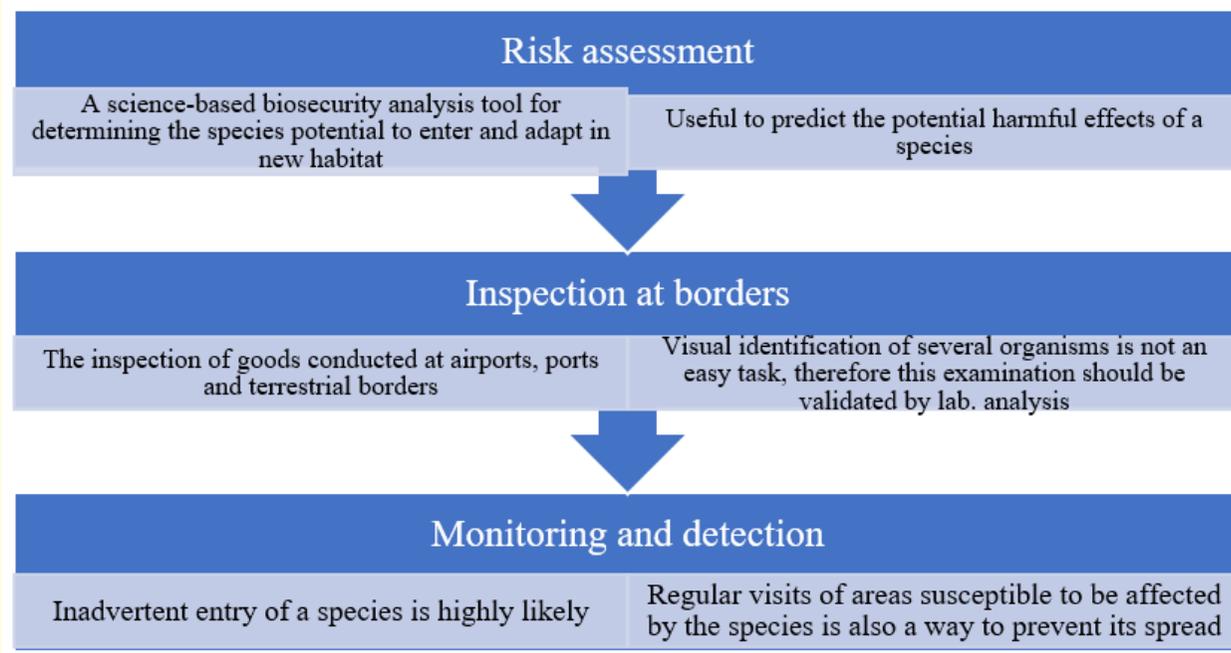


Figure 1: Steps of quarantine system.

Risk assessment

The first step, perhaps the most important one, is the risk assessment of organisms with a potential to become a pest in new habitat. In such a way, a list of prohibited species is conformed, and the inspectors will have better guidance for their work.

Risk assessment is a scientific process, where collected data of the eco-biology of the organism gives an indication of the likelihood of its entry and adaptation [7]. There is increasing evidence that climate change will interfere with processes of biological invasions [8,9] since it will induce higher air and soil temperatures, and it may trigger the establishment of several alien tropical or sub-tropical organisms, mostly alien plants, in temperate climate countries. A changing climate may directly or indirectly influences biological invasions by altering the likelihood of introduction or establishment, as well as modifying the geographic range, environmental impacts, economic costs or management of alien species [10]. Therefore, improved assessment with better knowledge of the behaviour of these organisms is a requirement.

Knowledge achieved from risk assessment provides better training of quarantine inspectors in methods for detecting alien organisms at the border points. They should learn countries and shipments where these organisms may be coming from, particularities that differentiate them, and rapid ways for their elimination.

The number of prevented entries of organisms in any country is a measure of the success of the quarantine system. Although entry of a single species does not mean automatic adaptation, prevention saves losses and resources for monitoring and post-border control measures.

Monitoring

Monitoring consist of techniques for detecting targeted quarantine organisms, often done visually in the first instance, but laboratory support is required for confirmation. Not being a priority, only a few countries conduct monitoring and governments do not allocate necessary resources and labour required.

Since species behave differently, there is a need of guidelines for monitoring, which should include prioritized areas, where the species may be present, the system and organization of sampling, and field extension to inspect. Early detection of invasive plants with long lag phase (Figure 2), i.e. the time between a species arriving in a region and its population expanding and being considered invasive [11], helps considerably to prevent their outbreak in the field.

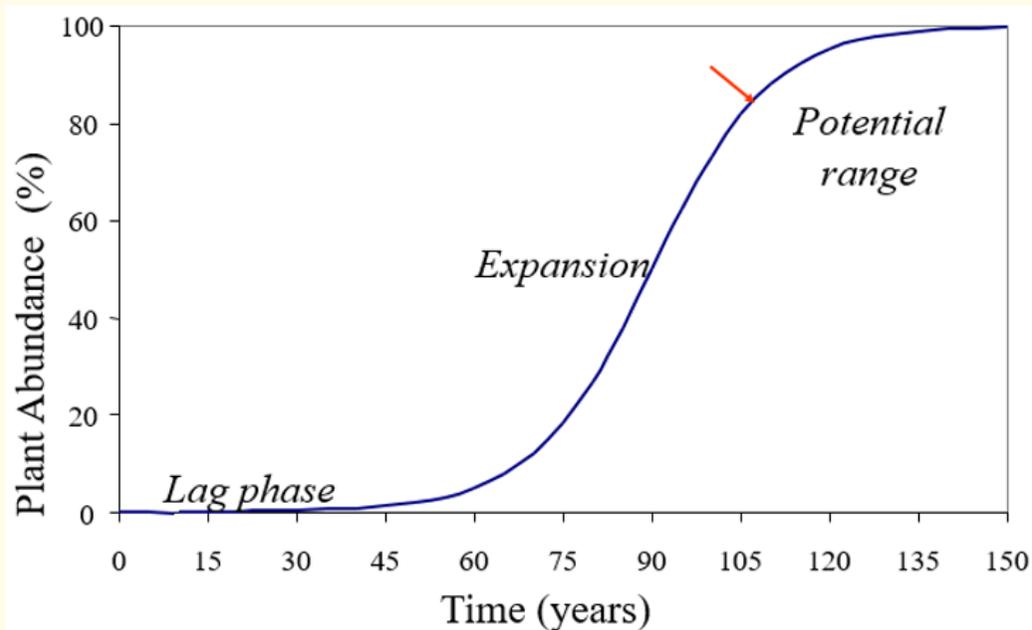


Figure 2: Model of plant invasion process.

The spread of the species is an indicator for the implementation of post-border control measures. Eradication is a feasible option when limited spread of a species. The adoption of other decisions, e.g. containment or integrated management, will depend on the extent of the spread and resources required for its control.

Bibliography

1. Ortiz Ospina Esteban and Diana Beltekian. Trade and globalization. Our World in data (2014).
2. FAO. "Climate-related transboundary pests and diseases". Expert consultation, Rome (2018).
3. Kenis M and Branco Manuela. "Impact of alien terrestrial arthropods in Europe". *Biodiversity and Ecosystem Risk Assessment* 4.1 (2010): 51-71.
4. Pimentel D., *et al.* "Economic and environmental threats of alien plant, animal, and microbe invasions". *Agriculture, Ecosystems and Environment* 84.1 (2001): 1-20.
5. Anon. "Especies introducidas en España. Ecologistas en acción, 6 enero" (2003).
6. Fernández Muerza A. "Especies invasoras en Europa". Consumer.es (2010).
7. Williams P. "Guidelines for weed-risk assessment in developing countries". In *Weed Management for Developing Countries*, Addendum I. FAO Plant Production and Protection Paper No. 120, edited R. Labrada (2003).
8. Dukes JS and Mooney HA. "Does global change increase the success of biological invaders?" *Trends in Ecology and Evolution* 14.4 (1999): 135-139.
9. Beest te M., *et al.* "The more the better? The role of polyploidy in facilitating plant invasions". *Annals of Botany* 109.1 (2012): 19-45.
10. Hulme PE. "Climate change and biological invasions: evidence, expectations, and response options". *Biological Reviews of the Cambridge Philosophical Society* 92.3 (2017): 1297-1313.
11. Crooks J. "Lag times and exotic species: The ecology and management of biological invasions in slow-motion". *Ecoscience* 12.3 (2005): 316-329.

Volume 6 Issue 6 June 2020

© All rights reserved by Ricardo Labrada.