

Invasive Species, Agriculture, and Trade: Case Studies from the NAFTA Context

Authors: Anne Perrault, Morgan Bennett, Stas Burgiel, Aimee Delach and Carroll Muffett

Invasions by plants, animals, and pathogens into non-native environments pose one of the most significant but least addressed international threats to biodiversity within natural ecosystems and agricultural settings. One recent study estimates that 40 percent of all insect damage to crops in the US is attributable to non-indigenous species (Pimentel *et al.* 2000).

This paper examines the interrelation of invasive species, agriculture, and international trade, and highlights future areas for research and policy development. The analysis focuses on both the intra-continental level and the inter-continental level. In the first instance, it considers the species introduction that has occurred as a result of trade among Canada, Mexico and the US. In the second, it examines introductions that have occurred as a result of trade between NAFTA and non-NAFTA countries.

The paper questions the effectiveness of existing regulatory mechanisms and highlights the challenges posed by increased trade. In order to illustrate the significant threats that invasive species pose to agriculture in North America, it uses a number of case studies that outline the primary pathways and impact of a number of invasive species. For example, it maps the primary pathway of the invasion of the Asian Long-horned Beetle (*Anoplophora glabripennis*) on solid wood packing materials, and the invasion of the Plum Pox Virus on nursery stock. A case study of genetically modified (GM) maize identifies GM introgression as another pathway for invasive species into North America.

The impacts and costs of invasive species can broadly be divided into six categories: crop losses, rangeland value decline, water resource depletion, livestock disease, genetic contamination and management and eradication costs.

While the impact of invasive alien species is most evident at the local and national levels, the paper discusses how the root causes of their spread are regional and international, driven primarily by global trade, transport and tourism. In fact, it suggests that regional trade tends to exacerbate the pressures of global trade. In other words, trade among NAFTA countries spreads alien invasive species that have been introduced as a result of NAFTA countries trading with non-NAFTA countries. In particular, the primary conduit for alien invasive species entering NAFTA is the US due to its disproportionate role in the flow of goods into the continent.

North America has not been able to inspect for alien invasive species at a rate that matches the increasing trade flow resulting from the expansion of international and regional trade through NAFTA. Currently Canada and the US maintain an inspection rate of only approximately two percent, which significantly increases the potential for the introduction of alien invasive species via trade.

The paper makes a number of recommendations that address the case studies examined but can be applied on a broader level. In addition to existing efforts to exchange information and ideas, it recommends that NAFTA countries act on the following:

1. Develop a North American strategy to address alien invasive species, which acknowledges the need to develop technical and institutional capacities that address invasive species.

2. Shift the focus from increasing trade while dealing with invasive species to addressing invasives while allowing trade, recognize the costs associated with introductions via trade of alien invasive species.
3. Minimize countries' dependence on inspections. For example, ensure that those responsible for the movement of invasive species are motivated to reduce the likelihood of introducing of invasive alien species.
4. Institute additional measures to prevent the introduction and establishment of alien invasive species, including, for example, requiring documentation of the country of origin of specific materials, or mandating the use of products other than solid wood packing materials.
5. Encourage the involvement of regional organizations in the development of regional and international standards for materials security.
6. Ensure that existing and future bilateral and regional free trade agreements provide sufficient leeway to develop the sanitary, phytosanitary and zoosanitary measures necessary to prevent the introduction of invasive species, including the use of a pathway approach.