

## Benefit cost analysis of an import access request

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### Abstract

Invasive species outbreaks are often unintended side effects of trade. In this paper partial equilibrium trade models and stochastic bioeconomic impact simulation models are combined to present a benefit cost analysis template to assess market access requests. The template is used to assess the likely regional economic welfare implications of a decision by Australian biosecurity regulators to allow the Chilean table grape industry access to the national table grape market. We show that consumption benefits expected to accrue to Western Australia are exceeded by increases in likely invasive species damage resulting from grape imports, implying that insufficient consumer gains are grounds to deny market access.

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### Introduction

As the interconnectedness of trading economies throughout the world continues to increase, so too does the damage expected from invasive species incursions. While the opening up of new and lucrative trade pathways facilitated by the World Trade Organization (WTO) increase the abundance and variety of goods available to consumers, the international community must remain mindful of the potential damage caused as a result of biological contaminations. The damage caused by invasive species has been described as “immense, insidious, increasing and irreversible” (Sandlund et al., 1996). This has been highlighted through a combination of quantitative assessments like Pimentel et al. (2002) and anecdotal “horror stories” like those provided in Bright (1998) and Baskin (2002). Many species included in these assessments are thought to have occurred as a result of trade (Levine and D’Antonio, 2003). While resultant environmental damage

is recognised in international agreements such as the *Convention on Biological Diversity* (1991), topographically and demographically disperse invasive species impacts typically prevent commodity markets from capturing all the costs associated with trade. It therefore falls to individual governments to consider the tradeoff between trade benefits and invasive species risk.

Although this tradeoff is readily acknowledged (Snape and Orden, 2001; Josling et al., 2004), research has tended to focus on one or the other. Whilst internationally net welfare analyses such as Petersen and Orden (2006) have been used to inform international trade policies, invasive species production impacts have tended to receive the majority of scholarly attention in the Australian context. This is due (in part) to their inclusion in the WTO’s Agreement on the Application of Sanitary and Phytosanitary Measures (henceforth termed the SPS Agreement) as relevant economic factors to consider in import risk assessments (GATT, 1994). Economic assessments of market access requests made to Australia have largely been absent from trade decisions apart from those concerning persistent requests from high-profile sources. Examples such as Bhati and Rees (1996), McKelvie (1991) and McKelvie et al. (1994) have focussed on specific quarantine decisions as

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opposed to the broader social welfare implications of policy options (Nunn, 2001; Roberts, 2001). In contrast James and Anderson (1998) and Cook and Fraser (2002) have largely focused on the increased utility of consumers resulting from cheaper imports of agricultural commodities, and have been not explored consequent invasive species outbreaks in any detail.

In this paper we answer the challenge of comparing both consumption gains and potential invasive species damage associated with a trade decision. We present a case study involving table grape imports into the State of Western Australia (WA) with the potential to act as a vector for the entry of a number of harmful invasive species of grapes. We suggest that in this particular instance allowing imports may result in production losses through invasive species damage of \$10.3 million, and consumption benefits of only \$1.5 million. All monetary values in the paper are expressed in Australian dollars unless otherwise specified.

## Background

Today many governments have in place comprehensive risk mitigation strategies in an attempt to curtail the damage caused by trade-related invasive species introduction. Economic losses attributable to invasive species in the United States have been valued at US\$137 billion (Pimentel et al., 2000, 2005), and around US\$1.5 trillion per annum worldwide (Pimentel et al., 2002). While aggregate regional and worldwide damage assessments have been put forward, quantitative information on specific invasive species introductions and their impacts are not widely available. Those species associated with specific trade pathways that have been the subject of economic analyses have typically been considered in terms of their production impact (Cook, 2005).

Although important, these merely reflect unintended consequences of trade. In themselves they are insufficient to make a judgment about the net impacts of the decision to trade. The benefits of importing agricultural commodities may also be substantial. Plant-based industries alone contribute over \$50 billion to the Australian economy every year (Australian Bureau of Statistics, 2004), and all but a tiny portion of this amount is attributable to non-native species. They play a vital role in community development, social cohesion and can also provide environmental benefits such as mitigating dryland salinity (Virtue et al., 2004).

Nevertheless, import risk analyses (IRA) typically exclude the benefits of trade in favor of either quantitative or qualitative assessments of possible invasive species impacts. This is the case in most WTO Member countries, including Australia. Currently, factors considered relevant justifications for trade-restricting SPS measures are limited to potential production impacts resulting from invasive species introductions as a result of trade (see GATT (1994), Article 5, Paragraph 3). Requests made to Australia to access food markets initiate detailed and scientifically

rigorous IRAs carried out by Biosecurity Australia in consultation with other relevant State and federal regulatory authorities. These assessments ascertain whether or not trade in the commodity concerned exposes Australian industries and the environment to an unacceptably high level of risk.

The standard by which this is determined, the appropriate level of protection (ALOP), notionally represents the maximum level of risk deemed tolerable by regulators. It is a locus of arrival probabilities and incursion consequences with a unique product. In practice, this standard has proven to be elusive. In fact no country or region has thus far expressed its ALOP quantitatively (Henson, 2001). From a political perspective it is difficult for any division of government to admit to a certain level of crop and livestock loss, or perhaps even loss of human life that it considers “acceptable”. Moreover, a quantitative expression of ALOP may open governments to attack from other members due to inconsistencies in the application of the standard. For these reasons the ALOP tends to be stated semi-quantitatively. It is described using generic, non-scientific language such as “high”, “moderate” or “low”. Australia’s ALOP is termed “very low” (Biosecurity Australia, 2001).

Following a request from the Chilean Government for market access to the Australian table grape market in 1995, Biosecurity Australia initiated an IRA in December 1998. The assessment, finally released in September 2005, identified 39 invasive species necessitating SPS measures to reduce the risk associated with imported table grapes below the ALOP (Biosecurity Australia, 2005). On the basis of these findings, Chile table grape producers were granted access to the Australian market. No reference to the regional effects of subsequent trade was or has been made.

The implications of international competition in the Australian table grape market are of particular interest to the State of Western Australia (WA). Currently, all importation of table grapes from interstate or international sources is banned (Western Australian Quarantine and Inspection Service, 1999), but pressure is mounting to relax quarantine regulations and allow quarantine-restricted trade. The relative isolation of the State means the impacts of the Chilean table grape decision are expected to be indirect, but nonetheless severe. While markets in the eastern States of Australia can be supplied by Chilean growers at prices below a domestic market equilibrium price, transport costs prevent them from doing likewise to the WA market. But, in response to increased international competition eastern States industries are set to begin exporting table grapes to WA, thereby shifting the pressure of competition (at least in part) to the WA industry.

If all regions of Australia were to have the same invasive species status this would not pose a problem (as far as the risk of species transference is concerned). However, WA enjoys a unique status in comparison to other States and Territories of Australia in that it is free of many invasive

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