RIA Training, 18-20 November 2008

Session 13 – Plant Health case study

In this interactive case study, participants will work in smaller working groups with the aim to go through all the main elements of a full RIA (the problem definition, problems facing the analysts, choice of method, data collection, consultation and presentation of benefits and costs). The case study is partly based on material for the regulation of Plant Health in Turkey.

Each group will present its RIA components to the entire class including a commentary by the instructors and participants. Each group should select a presenter.

The RIA presentation on the case study should for each group include:

- A plan for the whole RIA process
    - The plan should contain information on specific activities, when they are going to happen, important deadlines and the resources needed (mandays) for the whole process. (See template on RIA plan)
- Problem definition and objectives
    - Participants are expected to follow the discussions from session 6 on problem definition and objectives based on the plant health regulation
- Options proposed
    - Participants are asked to identify a range of possible options based on the material available.
- Analysis proposed
    - Participants are asked to propose analysis in relation to the suggested options, including ideas on data collection. (See template on analysis)
- Consultation strategy
    - Participants are asked to propose a consultation strategy for the Plant Health regulation. (See template on consultation strategy)
- Full RIA
    - All the main findings of the case study should be presented in a full RIA format (See template on full RIA).

Support-material: Template for RIA-timetable, Template for consultation strategy, Template for full RIA, Template for analysis.

Introduction[1]

The law regulating agricultural control and agricultural quarantine in Turkey was passed in 1957. In view of Turkey's pre-accession legislative harmonization with the EU acquis, a commission was formed to review the current regulation and to update it according to the current international requirements and trends. Some of the issues taken into consideration were the need to update in conformity with international rules, in particular EU directives, regulating plant health and plant movement, the inadequacy of current Turkish legislation to protect against contamination of land, the lack of specialised customs at border gates for the movement of plants and plant products, and problems in managing quarantine areas especially in Free Zones.

The plant health programme seeks to safeguard and improve the health and quality of commercially produced plants and plant products. A key element of this programme is to prevent the introduction

[1] The material is based on UK 'Economic Evaluation of MAFF's Plant Health Programme', 2000

and spread of harmful non-native organisms and to take action against quarantine pests and diseases if they do become established.

A *plant pest* is any species, strain or biotype of plant, animal or pathogenic agent, injurious to plants or plant products (IPPC, 1999). The term *quarantine pest* applies to pests of potential economic importance to the area endangered, and not yet present there (or present but not widely distributed), and being officially controlled (IPPC, 1999). By *pest control* is meant any actions leading to the suppression, containment or eradication of the pest population (IPPC, 1999).

Non-native species do not necessarily create undesirable risks. In fact, evidence suggests that only a very small proportion of all alien species ever become a pest in a new territory (Kareiva, 1996). The 'tens' rule of thumb of biological invasions specifies that only 10% of introduced species become established, and, of those, only 10% become pests (Williamson, 1996). Although the risk of a calamity is very low, if a pest does occur its economic and environmental impacts can be extremely large (Knowler and Barbier, 2000). For example, the cumulative damage costs from alien species in the US have been estimated to be about $100 billion, for a selected group of pests over 85 years, by OTA (1993) and, for all introduced pests (some 50,000 species), at $123 billion per year by Cornell University (Pimentel et al., 1999).

The risk of introducing non-indigenous organisms is rising. This is due to: increase in world trade, population mobility and tourism; increase in information, communication, technology and wealth in developed countries creating a demand for exotic plant material; habitat fragmentation that may increase vulnerability; and generally, a tendency towards the globalisation of the world economy (Shogren, 1999).

As in other markets, there is a demand for plant health and a supply of plant health. Amongst the buyers of plant health are plant growers/producers/importers and consumers of plants and plant products (e.g. in the case of ornamental plants); for the former plants and seeds are inputs in their production processes, while for the latter they are final products. On the supply side are the producers and exporters of plants and plant products. Generally, there is a rationale for public intervention if this market fails to provide the socially optimum level of plant health.

Market failure

Market failure in plant and produce health markets may occur because of the presence of environmental externalities and/or imperfect information. In plant markets, negative environmental externalities arise because plants and produce may carry with them diseases and alien organisms that can become pests, imposing costs on third parties by spreading to other crops and negatively affecting the surrounding environment. Table 5.1 depicts the sources of plant pest introduction, its physical consequences and the agents that are likely to be affected.

Table 5.1: Causes and consequences of plant pests and invasive species

Sources of introduction	**Potential ecosystem effects**	**Agents affected**
Professional importers (e.g. of nursery stock, cut flowers, vegetables) Casual importers (e.g. tourists, military personnel, travellers) Adventitious carriers (e.g. aircraft, ships)	Agricultural losses Destruction of biodiversity and ecosystems Climate changes Changes in the hydrological cycle Landscape destruction Community disruption Recreation losses	Importers/growers/farmers e.g. those who introduced or bought the affected material and others if it spreads) Consumers (e.g. those who introduced or bought the affected material) Society in general

Market failure arises because the market for plant health does not take into account the external environmental benefits that a higher level of plant health would ensure. It would be driven by private decisions about the acceptable level of plant health risk (i.e. marginal social benefits exceed marginal private benefits). Consequently, just like other positive externalities, the level of plant health in equilibrium would be lower than would be optimal for society.

Plant health can be seen to possess *public good* characteristics. *Public goods*, which may be regarded as a special type of positive externality, have two distinguishing characteristics: they can be consumed simultaneously by everyone (non-rival) and no one can be excluded from its consumption (non-excludable). These goods are typically provided for collectively by governments and paid for through taxes. The Nairn Review of Australian quarantine (Nairn et al., 1996) discussed the public good role of plant health services. It indicated that organisations other than government would not choose to provide these services on a commercial basis, that if they did it would be at a higher price. In addition some of the services require special responsibilities that government could not expect another organisation to undertake. For instance, only government can take certain regulatory actions under international agreements. The principle of public goods can also apply within the EU and internationally.

Government intervention in the area of plant health policy (whether in the form of prevention or control measures) may have large benefits, by increasing the levels of plant health, avoiding or reducing some of the negative environmental impacts associated with plant pests and diseases.

Standard economic models assume perfect information, that is, all agents in the market have full information about product characteristics and prices. This is not the case in plant and produce markets where there is *asymmetric information* between buyers and sellers, i.e. information about the product is not equal on both sides of the market. Safety attributes in plants and produce may not be easy to observe. While plant producers may have a good idea about the health standards of their products (which are a function of the quality of the soil, geographical area, agricultural techniques, monitoring procedures and quarantine and pest control measures adopted), for buyers it is not easy to assess the standards of plant health as harmful organisms may not be easy to observe. There is, therefore, a role for government to intervene to ensure that standards common to both producers and buyers are known and met.

The consequences of information asymmetry are well known in economics. In the case of plant health, if buyers cannot easily identify diseases in plants and plant products, and assuming that higher levels of plant health are more costly to achieve due to quarantine treatments and safe production methods, then there will be a tendency for sellers to supply riskier products (Akerloff, 1970), leading to market failure. Hence, some sort of quality assurance is needed to guarantee that the products are pest-free. Government intervention may be beneficial in this respect.

Information asymmetry is not equally problematic for all types of goods. In terms of information, goods can be classified into one of three types: search goods, experience goods and post-experience goods (Boardman *et al*., 1996). Search goods have characteristics that buyers can learn about, prior to the purchase, by examining the good or relevant external sources. Experience goods are goods about which consumers can obtain full knowledge after purchasing and experiencing them. Post-experience goods refer to products about which consumers can fully learn only after a period of time. Evidence shows that plant health has in many cases, characteristics of a post-experience good, i.e. non-native organisms may not become established and develop into pests until well after their introduction. It is in this latter case that government intervention can be most beneficial as information asymmetry may persist for a long period of time (Boardman *et al*., 1996).

Finally, it is worth noting that many markets for plants and plant products do not actually operate freely but are subject to a number of distortions arising from regulations and support regimes. And with imported products, additional difficulties lie in enforcing contractual relationships in respect to plant health when actors fall within different jurisdictions. These issues also cause markets not to reach socially optimal outcomes.