

EPPO Information on Plant health aspects of bioterrorism: Threats and Preparedness

Introduction

The potential of terrorist attacks against agricultural targets as well as against forests (agro-terrorism) is increasingly recognized as a national security threat, especially after the events of 2001-09-11 (with the massive terrorist attacks in New York). Agro-terrorism is a subset of bio-terrorism, and is defined as the deliberate introduction of an animal or plant pest with the goal of generating fear, causing economic damage, and/or undermining social stability. Attacks against agriculture are not new and have been conducted or considered by both nation-states and sub-state organizations throughout history.

Plant pests¹ pose less risk to human health than animal pests and diseases. Their main impacts are economic, reducing the yield and quality of crops but they can also damage the national economy by affecting imports and exports and by harming the country's natural environment. In addition public confidence may be particularly sensitive to a deliberate outbreak of a disease that affects the food chain and food security.

The main risk of unintentional introduction of alien pests comes from imported plants and plant products. Alien pests could however potentially be introduced maliciously. Such introduction may considerably reduce dispersal times of the pest and happen within days. However, irrespective of the mode of introduction, it is the responsibility of an NPPO to keep alien pests out of the country, contain and eradicate outbreaks if they occur. Or, if this does not work, contain the pests until there are either effective means for their control or varieties of plants that are resistant to them.

During the initial stages of any outbreak it is unlikely that an NPPO will know whether it was the result of an intentional introduction because this can normally only be ascertained following detailed investigations, unless of course prior notification is given by a terrorist group. The same mechanisms would therefore operate whether the pest was the result of a "normal", unintentional introduction, or whether it was the consequence of a deliberate release. The mechanisms to deal with such cases are pest risk analysis, surveillance, reliable diagnosis, well established contingency plans and a well co-ordinated outbreak management response capable of being scaled up. Following outbreaks it is important to review the handling of the outbreak and the operation of the contingency plan (i.e. 'lessons learned').

Pest risk analysis

The main elements to be clarified when performing pest risk analysis for a bio-terrorism attack are those which are also relevant in case of an unintentional pest introduction. Nevertheless, there are differences in terms of pest risk assessment for individual pests in the case of deliberate release compared to unintentional introduction. For example, the analysis of trade pathways is less important. This means that very damaging diseases that may be currently categorized as low risk because of the lack of a natural pathway for entry, may be classed as high risk in terms of agro-terrorism. This question may be addressed by revising Pest Risk Assessment Schemes.

There are a very large number of plant pests that can potentially be damaging if intentionally introduced; the EPPO A1 and A2 Lists include more than 300 key pests that plant health authorities

¹ Pest as defined in ISPM no 5 *Glossary of Phytosanitary Terms*: any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products

are recommended to regulate in order to prevent them from being introduced into the EPPO member countries. These organisms have been identified as a risk to the EPPO region because trade or other pathways (e.g. plant introductions for scientific or breeding purposes) exist. Although these pests have the potential of a negative impact on the long term, the intentional release of the vast majority of these is unlikely to result in an immediate dramatic impact. Furthermore some pests by their biology or epidemiology may not lend themselves to use in agro-terrorism. Assessments of the economic importance and vulnerability of crops have to be undertaken together with the suitability of individual pests to be potentially used as biological weapons. It is therefore important for the NPPO to identify 'high risk' ones; potentially dangerous pests based on epidemiological, economical and sociological criteria. In this regard some of the factors that may be important in this assessment are:

- How easy it would be to obtain the pest (e.g. from a culture collection or collected from the environment)?
- How easily could the pest be produced in quantities large enough for malicious use? What specialist knowledge/facilities would be needed?
- How infectious is the pest and by what routes?
- How likely is the pest to rapidly spread?
- What treatments are available?
- How easily can the pest be contained and eradicated?
- How damaging is the pest likely to be in the short and medium term?

Surveillance and intelligence

The earlier a pest problem is identified and investigated, the quicker control measures can be put in place. Surveillance for pests of plant is one of the key responsibilities of the NPPO according to article IV of IPPC. Nationally, surveillance is delivered through formal and informal networks (farmers, private consultants, diagnostic laboratories, inspectors, etc.). Training of phytosanitary inspectors and other persons involved in crop surveillance is one of the most significant tasks. They should be able to detect not only known pests but also notice new pests or any unusual problem. In addition, intelligence may be necessary to prevent attacks in advance, identify the planning of those attacks and in order to identify whether an outbreak had a terrorist background. Internationally, organizations like EPPO and the European Commission have a key role to play both in terms of co-ordinating pan-national approaches and developing guidance.

Contingency Plans

Responding to new and emerging threats is an integral part of an NPPO's ongoing role and good contingency planning is key to ensuring an effective response to major outbreaks, irrespective whether these can be attributed to intentional release by bioterrorists or unintentional introduction by trade of plants or plant products.. All components of the control procedure need to be in place to ensure that there is effective control. Contingency plans can be generic or more specialized dealing specifically with certain pests that are considered to pose a major threat. An important consideration in the case of an agro-terrorism incident will be publicity and the handling of the media.

Diagnosis

Rapid and accurate diagnosis of a pest is a critical first step in any outbreak, irrespective whether this can be attributed to intentional release or unintentional introduction. In the case of major outbreaks testing capacity may need to be scaled up very rapidly to cope with increased demand for testing.

Outbreak Management

Measures to manage an outbreak either caused by a bio-terrorism attack or by unintentional introduction are basically the same. Follow-up action depends on the nature of the pest problem. A range of actions may be required such as the lifting of legal restrictions, cleansing and disinfection of premises, disposal of infected material and other wastes, and opening up of trade. For major outbreaks a review of the handling of the outbreak should be undertaken and the operation of the contingency plan and the co-operation of different agencies scrutinized to assess whether changes are needed.