**EPPO - NAPPO PAPER ON PRIORITY PEST LISTS**

**Summary**

Lists of priority pests can be useful in allocating resources. However there must be clarity on the purpose of any list and the resources for which pests are being given priority by being included on the list. The purpose, clearly stated, should help to determine how a list should be developed and whether this is best done at a global, regional or national level.

**Background**

For the last three years the Technical Consultation between RPPOs has had on its agenda the question of priority pest lists and specifically “Feasibility to draw up list of priority pests (National, Regional, Global and under which modalities)”. The TC participants had different views on the issue when it was first raised in 2012. In 2013 some RPPOs expressed their opinion that it was impossible to build up such lists, while others supported the idea. It was agreed, to quote the TC report:

* To think more strategically about these lists
* To study the high priority regulated pests considering cultivated area, volume, and value for the host commodity
* To think about global/regional protection when establishing these lists.

The TC in 2014 “encouraged all RPPOs to present the status of the issue in their region for further consideration at the next TC”. This paper addressed the first of those bullet points. It has been developed by EPPO and NAPPO and reflects the results of discussions in their regions.

**Introduction**

Prioritisation of effort and justification of measures are two distinct but overlapping responsibilities of National Plant Protection Organisations (NPPOs). Pest Risk Analysis (PRA) can be used as a tool for both purposes but has been developed mostly for justification, either on a pest by pest basis or pathway by pathway. PRA as currently described in international and regional standards is too elaborate a process to use for prioritisation between thousands of potential pests which may threaten hundreds of plant species important for the economy or environment of each country.

The large number of pests regulated or recommended for regulation in many countries and regions has led to discussion about how general priorities should be established. This was an issue, for example, during the review of the EU Plant Health Regime, when the proposal was made to substantially reduce the list of regulated pests in order to improve focus. Elements of the debate were captured in the evaluation report (European Union 2010) where “the scope for prioritisation is explored further in relation to options for the future to ensure better prevention and to maximise the cost-effectiveness of current measures and resources”. A list of 20 pests which were a priority for at least five EU Member States and which “appear to occupy most of the staff time at Member States’ plant health services” was included, but the evaluation noted that this focus did not necessarily reflect optimal cost effectiveness. The end result of the negotiations is likely to be a short list of priority pests for specific purposes, such as EU co-funding of surveillance and contingency planning, but no reduction in the overall number of regulated pests.

Some countries have developed systems specifically to prioritise efforts across all known potential threats such as the UK Plant Health Risk Register (Baker et al. 2014). EPPO has developed a prioritisation process for invasive alien plants (EPPO 2012) but does not have an equivalent system for plant pests. NAPPO has also done work on prioritising weeds. Both RPPOs have noted the difficulty of achieving agreement on priorities across very diverse regions. More quantitative approaches have also been explored for prioritising effort between pests and between different aspects of risk mitigation: exclusion, detection and eradication (Carrasco et al. 2010). However there are currently no agreed international approaches on how national priority lists could be produced, nor on whether it is possible to envisage meaningful priority lists on a regional or global scale.

**Principles**

In considering whether it is possible or desirable to produce lists of priority pests at national, regional or global levels, it is necessary to ask what is meant by a priority pest: specifically what is it a priority for? Being on a priority list implies that a pest has a higher claim on some limited resource: that expenditure of that resource on that pest will bring a higher return than the same expenditure on another pest not listed as a priority.

**Priority lists versus “top ten” lists**

There is a clear difference between priority lists, and lists of “top pests” which exceed other pests in some measurable respect. It would be possible to list, for example, the ten most economically damaging pests globally or regionally. There would be difficulties in gathering the data, quantifying the lost production and control costs, choosing the right taxonomic level for the analysis, and defining scope (for example whether weeds should be included). In principle, though, it is a simple question with a simple answer. A priority list, by contrast, implies judgements about resource allocation, and cannot be generated by a simple technical analysis. There is no automatic link between priorities for plant health services and measurable factors such as level of damage. A widespread foliar pathogen of a major crop may be one of the most damaging pests in the world without featuring on any NPPO’s list of priorities. This is because the measures which could be taken by the NPPO would not be cost effective in reducing the damage. Conversely there are many examples of organisms which cause minimal damage in their area of origin - which are not even pests there - but which could cause significant damage when moved to new areas. Keeping these organisms from moving to where they would be pests is a major benefit from the work of plant health services (e.g. through horizontal measures such as ISPM15). However these organisms will not necessarily appear on the list of top pests in either the region of origin (where they are not pests) or the regions at risk (where they may not be known to be a risk).

Below are included the various purposes for which priority lists could be developed, noting that the content of the lists will vary depending on the purpose. Priority pests for regulation might differ from those identified for surveillance, for instance. In some cases, though, a pest might appear on more than one list.

**Priorities for Regulation**

Regulation itself is not a finite resource; it is possible in theory to keep adding pests to a regulatory regime if the measures can be justified on a case by case basis. However in practice lists can become unmanageably large, hence the discussion during the review of the EU regime as to whether it was possible for stakeholders and NPPOs to address risks from nearly 300 different pests. Teams adding pests to legislation, with all of the justification and supporting evidence that requires, do have limited resources and have to prioritise between different candidate organisms. This prioritisation is based partly on stakeholder representations but also technical analysis of which pests will give the highest balance of benefits over costs from changes to regulations. Since regulation is a national responsibility it is not possible to envisage a global list of such priorities, although regional collaboration is valuable (e.g. EPPO lists of organisms recommended for regulation, EPPO 2015) and may also help to establish criteria for drawing up priorities which can be applied at national level.

Industry associations (e.g. for seeds) may develop their own lists of priorities for international harmonisation of regulation, which is a different but linked concept.

**Priorities for Pest Risk Analysis**

PRA itself is a resource requiring activity and is often a pre-requisite for regulation. Prioritisation processes may be used to manage the queue of organisms for which PRA is proposed. Express PRA schemes (e.g. EPPO 2012) may be used to give an initial indication of whether measures are justified and whether there are any critical aspects which must be addressed through a full PRA. In Canada a categorisation process is used as a kind of express PRA for prioritisation. Since PRA starts with definition of a “PRA area”, a global list of priorities for PRA is not a realistic prospect.

**Priorities for Research**

Horizon scanning, preliminary assessments and PRA itself are used to identify research priorities; gaps in knowledge which could be filled through research leading to improved targeting of risks or more effective measures. While priorities for research differ between different countries, depending on risks, in principle it is possible to collate priorities of different funders in a region or internationally to draw up collaborative programmes of research. An example of how this can be done is the Euphresco research funders and managers network which was originally established by the EU, and is now hosted by EPPO.

**Priorities for Standards**

The IPPC/CPM sets priorities for development of ISPMs, but even when these are pest specific (e.g. diagnostic protocols and treatment protocols) this reflects not so much the importance of the pest as the urgency of the need being addressed.
A major pest which is easy to identify may get lower priority for a diagnostic protocol than a lesser pest which is hard to distinguish from other organisms. The same sort of prioritisation is needed at regional level for regional standards, co-ordinated with global priorities to make best use of resources.

**Priorities for Monitoring and Surveillance**

One aspect of prioritisation which is likely to feature in the new EU plant health regime is a list of pests for which surveys will be mandatory and co-funded. The spread of pests which are potentially highly damaging for part of the EU will therefore be monitored across the EU, including in regions where they may be less damaging because of unfavourable climate or agricultural practices. An example of longstanding collaboration on surveillance within the EPPO framework is the regular reporting by the NPPO of France, to the plant health services in Jersey and Guernsey, of wind direction and population levels of Colorado beetle (*Leptinotarsa decemlineata*) which is not yet present on those islands.

Setting global priorities for surveillance would be challenging, but might be possible within agro-climatic zones, where risks to one area can be correlated with pest population in other areas from which there are potential pathways of spread.

**Priorities for Contingency Planning**

In the USA priority pests are the subjects of what are termed New Pest response Guidelines which are documents that capture all the latest information on that pest in order to be “prepared” for when it arrives in the USA and have contingency plans for surveillance, domestic quarantines, trapping densities, etc. Contingency planning is the second element for which priority lists are likely to be required in the new EU plant health regime. The contingency plans themselves may be drawn up nationally or regionally. EPPO is considering how far pest specific contingency plans might be developed across the region, considering the many differences in administrative and legal processes between member countries. In Central America OIRSA has a programme of contingency planning work on *Fusarium oxysporum* f.sp. *cubense* race 4. There is real scope for international collaboration in contingency planning, in particular between those areas with experience of a pest, and those areas which have not yet had outbreaks. However priorities for contingency plans, as well as content, will inevitably be different between different areas, depending on the pest risks.

**Priorities for Awareness Raising on Pests**

One of the priority actions on perceiving a new risk may be to raise awareness among stakeholders. Target audiences include those who are seen to be at risk, and those who are able to mitigate the risk, for example because of their influence over key pathways. IPPC/CPM and RPPOs can collate and exchange information on new risks which NPPOs can then use in raising awareness with stakeholders. There are some constraints on IPPC/CPM or RPPOs communicating directly with stakeholders, including language - at least in the EPPO region, most countries do not use any of the FAO official languages as a national official language. However, there will be cases when IPPC/CPM or RPPOs can raise awareness of a new threat directly with a specialised and globalised sector which may be able to communicate more rapidly and effectively around its stakeholders than the NPPOs.

**Examples for Awareness Raising on Plant Health**

Awareness raising about the importance of plant health in general offers scope for international collaboration. This may now be focused on plans for an International Year of Plant Health in 2020. Interesting examples which can engage the attention of stakeholders in different countries and sectors will be essential. These examples, though, will not be a priority list, but a representative range of different types of pest organisms threatening different types of host plant in different ways, with different economic and environmental impacts avoided or reduced by different sorts of risk mitigation. Examples of successes and failures should also be included to illustrate the challenges of protecting plant resources from plant pests. It will be important to show that there are cases where the measures and efforts implemented lead to a success story. The purpose of these examples will be to show the various ways in which plant health is important, is at risk, and can be protected.

**Conclusion**

There is a difference between a priority list, prepared with a view to the allocation of resources and efforts, and a “top pest” list, which defines certain pests that exceed others according to some measurable factor. IPPC/CPM, RPPOs and NPPOs regularly have to prioritise between different activities, pests and pathways. Collaboration to identify regional or global priorities is essential for diagnostic protocols, for example, and may be possible for some other activities such as surveillance or research. Prioritisation has to be for particular purposes, though, and the priorities for different purposes may be different. Priority pest lists for regulation, PRA, monitoring and surveillance for example might make sense at the national or possibly regional level, but would not be practical to develop at the global level. By contrast, priorities for standard setting and contingency planning might be more appropriate to consider at the regional or global level, while research and awareness-raising may fall somewhere in between

On the other hand, it is not possible to draw up on a global basis a list of the top twenty priority pests for all purposes. Attempting to do so risks drawing resources away from activities on other pests where those resources are already be best placed.

**Next Steps**

One possible further step for the TC would be to consider for each type of priority list mentioned above whether development should be primarily at global, regional or national level. From those which are primarily global or regional it should be possible to set out ideas as to how lists could be developed and on what timescale.

**References**

Carrasco, L.R., Mumford, J.D., MacLeod, A., Knight, J.D & Baker, R.H.A. (2010) Comprehensive bioeconomic modelling of multiple harmful non-indigenous species. *Ecological economics* **69** (6),1303-1312.

EPPO (2012). Decision-support scheme for an Express Pest Risk Analysis. *EPPO Bulletin* **42**(3), 457-462.

EPPO (2012) PM 5/6(1): EPPO prioritization process for invasive alien plants. *EPPO Bulletin* **42(3)**, 463–474

European Union (2010) Evaluation of the community plant health regime. Food Chain Evaluation Consortium. http://ec.europa.eu/food/plant/plant\_health\_biosafety/rules/docs/executive\_summary\_eval\_en.pdf Accessed 3 March 2015.

R.H.A. Baker, H. Anderson, S. Bishop, A. MacLeod, N. Parkinson and M.G. Tuffen (2014). The UK Plant Health Risk Register: a tool for prioritizing actions. *EPPO Bulletin* **42(2)**, 187-194