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EPPO STANDARD ON PHYTOSANITARY PROCEDURES

PM 3/94 (1) Raising professional operators' awareness of regulated and emerging plant pests

Specific scope: This Standard provides National Plant Protection Organizations (NPPOs) with general guidance on when and how to raise awareness of professional operators involved in plant cultivation and trade about the risks of regulated and emerging pests and their pathways, and how to respond appropriately to resulting reports of suspect pest findings.
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1 | BACKGROUND

Raising awareness of professional operators (e.g. producers, traders, resellers, exporters, importers) within trade is important in the mitigation of current and future plant health issues. It can positively contribute to international and national plant health, encourage best practice, and aid the smooth flow of plant trade.

It is also a longstanding way of encouraging and facilitating early reporting of findings of regulated and emerging pests, enabling a quick response, and improving the understanding and acceptance of preventative and control measures.

Effective engagement and collaboration with professional operators ensure best working practices and early reporting of pest findings. In recent decades this has enabled rapid action by the NPPOs, eradicating or managing pests in the affected area, such as the fungus-like organism *Phytophthora kernoviae* on rhododendrons, the fungus *Cryphonectria parasitica* affecting chestnuts, the bacterium *Clavibacter sepedonicus* that causes ring rot of potatoes, *Xylella fastidiosa* on many hosts including olive trees and *Anoplophora* spp. that are damaging many broad-leaved tree species.

In principle, an engaged and aware trade sector can create a valuable group of knowledgeable people who become interested in plant health and can implement best practice in their businesses and trading operations to avoid pest introduction and spread. They can encourage their suppliers to do the same and facilitate peer-to-peer learning through their networks which may lead to greater awareness and behavioural change. This group may often be suitably placed to detect and report a pest before plant health authorities carry out official inspections and surveys. It is therefore of benefit to the protection and sustainability of the professional trade as a whole to have well-informed actors who are aware of the following points:

- which regulated and emerging plant pests to look for,
- what damage or symptoms they may cause,
- what these pests look like in comparison to similar biotic (e.g. native or non-harmful organisms) or abiotic factors,
- why these pests are a risk,
- where to find these pests (i.e. host plants, geographical and ecological niches) and
- what to do if they spot these pests (i.e. reporting mechanisms).

Clearly structured, unambiguous and timely communication is key in building trust and transparency for any awareness raising activity, be it information on a new outbreak or presenting the potential impact of future threats. Information coupled with a call to action is a particularly effective means of both engagement and behavioural change.

2 | WHEN AND WHY AWARENESS SHOULD BE RAISED

During the process of Pest Risk Analysis[1] appropriate risk management measures are identified. These may include measures to prevent introduction and spread, to ensure early detection if the pest is introduced or spreads to a new area, or to contain or eradicate outbreaks. Heightened awareness within the trade is an important element of such measures.

The trigger for raising awareness may be a first finding of a pest in the country, the arrival of the pest in a

[1]All EPPO Standards on Pest Risk Analysis can be retrieved from the EPPO Global Database (https://gd.eppo.int/standards/PM5/), and examples of PRAs can be found in the PRA Platform (https://pra.eppo.int). All ISPMs related to PRA can be retrieved from the IPPC website (https://www.ippc.int/en/core-activities/standards-setting/ispms/#publications).

neighbouring country, the identification of a new pathway for trade indicating that there is an increased risk of introduction or spread, or the implementation of requirements in plant health legislation.

Reasons for raising awareness may include:

- To encourage vigilance and surveillance within the supply chain.
- To encourage pest reporting.
- To explain measures being taken, in order to establish understanding and acceptance by the stakeholders of those measures.
- To involve professional operators and encourage compliance with measures including:
  - import controls (prohibitions and requirements).
  - requirements for internal movement.
  - containment measures.
  - eradication measures.
- To allow early detection and increase the success of the eradication of the pest.
- To underline the importance of plant health by providing examples of threats.

3 | KEY FACTORS WHEN CONSIDERING WHETHER RAISING AWARENESS OF PROFESSIONAL OPERATORS IS NECESSARY AND APPROPRIATE

Given the vast number of pests and trade pathways which are potential targets of pest management or phytosanitary measures, it is impractical and ineffective to raise awareness on all of these (e.g. on pests that are already well managed by professional operators). There are a number of key factors to consider when deciding the following:

- The degree of priority to give to different pests based on economic, social, and environmental impacts.
- The degree of priority of trade pathways.
- Whether raising awareness is likely, on balance, to make a positive contribution to the agreed risk management objectives for a pest.

Some factors in favour of an awareness raising activity would be:

- Risks of concern to the trade or wider public (e.g. economic/business risks, environmental risks, risks to gardens or street trees, risks to food production and timber supply, risks to a plant species of socio-economic, cultural, historical, or conservation importance, risks to humans, such as allergies, disease transmission, or nuisance in homes).
- Cases where early detection may lead to successful eradication and avoid high costs.
- Cases where increased awareness may avoid the need for other plant protection measures.
- Outbreaks likely to spread to parks, gardens, or the wider environment.[2]
- Outbreaks likely to be found within the supply chain before plants/trees go on to final point of sale.
- Pest (or symptoms) are easy to spot and/or diagnose (e.g. using accurate and rapid tests).
- Pest (or symptoms) clearly distinct from other organisms, particularly native species.
- Cases where increased awareness may encourage compliance with measures.

Factors suggesting caution about an awareness raising activity would be:

- High risk of action being taken inappropriately against 'lookalikes'[3]
- High risk of negative impact to trade if messages conveyed are confusing or unclear (e.g. on pest distribution, or economic damage).
- High risk of creating confusion among operators involved (e.g. within a supply chain between phytosanitary inspectors, customs, forwarding companies).
- High risk of adverse media coverage.
- Impact to businesses (reputational/economical).
- Costs of awareness raising activity exceed likely benefits (for example in the case of low chance of success of control measures).
- Malicious reports to the NPPO and/or the media may occur.

Raising awareness within the trade may lead to media stories that are picked up in the wider public press. This in turn may increase the number of reports of suspect findings and the likelihood of questions from the public and other trade bodies. It should be kept in mind that this may generate more information and require more resources from the NPPO. In addition, media stories could cause negative impact to trade business. Concerning malicious reports, handling protocols should be put in place.

4 | AUDIENCE

The scope of this Standard is limited to raising awareness of professional operators within plant cultivation and trade of plants and plant products (e.g. wood packaging material). Materials produced for this sector may also be of value in addressing other audiences, e.g. land owners. Different messages may be appropriate for

[2]Wider environment: this is to cover all possible types of environments (e.g. woods, forests, meadows, coast lines, road sides) to which the public may have access.

[3]Lookalike: an organism that closely resembles the pest, therefore confusion about the species identity is possible.

different groups, depending on the result required, but should in any case be consistent and based on the same factual background information.

The effectiveness of any awareness campaign can depend greatly on the targeting of the appropriate audience.

Consideration of the motivation, bias, availability, willingness to help, ability, trustworthiness and capacity for any awareness raising should be investigated.

Within the category of 'professional operator', a number of subgroups (sectors) may be identified:

- Horticultural/agricultural/forestry trade (grower/wholesaler).
- Horticultural/agricultural/forestry trade (retailer, including online).
- Horticultural/agricultural/forestry trade (logistics).
- Online third-party sellers (e.g. global platforms).
- Manufacturers (e.g. wood packaging material manufacturers).
- Landscapers (indoor and outdoor).
- Arboriculturalists.
- Foresters.
- Gardeners and gardening clubs.
- Professional organizations of growers (e.g. arboriculturalists, horticulturalists, and landscapers).
- Trade associations.

Other audiences for awareness raising activities may include:

- Politicians and senior officials.
- Media managers and journalists.
- Scientists.
- Local authorities.
- Schools and training institutes for agriculture, landscape, horticulture and arboriculture.
- General public (as customers or end users).
- Non-governmental organizations.
- Specialist consultants.
- Inspectors and (central) authorities.
- Custom authorities.
- Cargo companies and postal services.
- Plant products sellers (e.g. furniture stores).
- Land managers.
- Specialist amateur groups (e.g. entomologists or plant collectors).
- Keen amateur gardeners and their advisers, including allotment gardeners.
- Private land owners.

Occasionally targeting groups who would under normal circumstances not be interested in plant health may still be effective. Sometimes pests affect plant products, such as long-horned beetles found in furniture or wood-packaging, and these unusual instances may be used to engage with other professionals such as international shipping and logistics companies who use dunnage or wood-packaging within their operations.

With such a broad scope of audiences that might be considered to be professional operators, it is important to understand the specific risks attributable to each sector. Undertaking an audience segmentation and mapping exercise will help with understanding these specific risks and where to focus attention when considering specific pest or pathway risks. Examples of awareness raising activities targeting different audiences are presented in Figure 1.

5 | GEOGRAPHICAL TARGETING

When establishing an awareness campaign, it is of particular importance to define the appropriate geographical extent.

- Should the campaign be international, national, or more localized (e.g. at borders [border control posts], on a demarcated area, a particular forestry or horticultural production area, public gardens, on a nursery)?
- Is there a need for collaborative activity between adjoining administrations?
- Is there a risk that the pest has spread more widely than originally thought?

The geographical extent of a campaign largely depends on what is its main purpose. If the purpose of the campaign is to raise awareness on plant health in general or encourage compliance with legislation, its geographical coverage is likely to be wider than if the campaign targets a specific pest or a narrow audience (e.g. traders in *Agapanthus*, producers of tomato seeds, fruit plant producers, wood packing material manufacturers and treatment providers, bonsai importers). In pest-specific campaigns, their geographical extent is affected by the biology of the pest and the characteristics of the environment possibly at risk, e.g. glasshouse compared to the wider environment.

Geographical variation can be due to the presence of a particular host plant in one region and not in another, as well as to environmental and ecological conditions favouring or not the establishment and spread in a localized area. Some areas have more imports than others (e.g. due to proximity of airports or seaports), are enclosed (e.g. glasshouses), are nearer infested regions, or are nearer other 'risky' areas (e.g. main roads, large markets, dense human settlements, areas of intensive horticultural production).

With an outbreak, the awareness campaign should consider the epicentre of the outbreak, the periphery of the established pest range (dependent on the nature of the pest) and high-risk areas beyond. In such a situation, the messages conveyed to the different stages of the supply chain with the aim of encouraging reporting to help manage the

FIGURE 1 Examples of awareness raising activities targeting different audiences. (a) A toolkit (booklet) prepared by the Tree Council (UK) for local authorities on the oak processionary moth (*Thaumetopoea processionea*) presenting the pest, the risks and possible actions which can be taken. (b) A leaflet prepared by the Junta de Andalucia (Spain) on tomato brown rugose fruit virus inviting growers to apply good agricultural practices to avoid infections and to report any suspicious findings to the plant health authorities. (c) A leaflet prepared by AGES (Austrian Agency for Health and Food Safety) on Grapevine flavescence dorée phytoplasma and its vector *Scaphoideus titanus* for grapevine growers and authorities presenting the biology, distribution, risks, survey activities and possible actions which can be taken. (d) A datasheet on *Ditylenchus dipsaci* prepared by the NPPO of Austria for seed producers of onion and leek presenting the requirements for the movement of seeds. (e) Video on YouTube developed by SMHV (Dutch marking wood packaging foundation) for users of wood packaging material and dunnage about the importance of ISPM 15. https://youtu.be/sG9mYQfCgvg

problem are likely to be different. In areas outside the epicentre where the pest is not known to be present, messages would focus on what to look for and where to find the pest and would encourage pest reporting. In the epicentre, messages would also focus on the direct impact of the pest, highlight official inspection activities and raise awareness of the requirement to self-report any suspect findings to reduce the risk of further spread.

FIGURE 2 Poster prepared by the French NPPO for professional operators, presenting the phytosanitary measures which should be taken in a demarcated area in case of an outbreak of *Xylella fastidiosa*

An example of awareness raising activities illustrating geographical targeting of a communication campaign is provide in Figure 2.

6 | RESOURCES

Awareness raising activities require official resources not only to raise awareness but also, and less predictably, to respond to any resulting reports and to make a review of the campaign. Resources required include:

- Human resources.
- Finances.
- Technical resources.
- Information resources.

The potential benefits of a campaign need to be balanced against the possible resulting demands. A pilot campaign in one area or with one specialist target group may provide useful information on resource requirements before a decision is made on a wider campaign.

6.1 | Human resources

Assistance with publicity campaigns may require input from social scientists, trade specialists, and experts in communication and social media, as well as NPPO staff and researchers. These may be available to plant health services from press and publicity teams within the government or from specialist consultancies through government contracts. There may also be an increased

demand on technical services, such as inspectors, diagnostic teams or those staffing help-lines.

6.2 | Finances

Availability of budget needs to be considered for each campaign. The cost of obtaining images, producing leaflets, cost of attending promotional events and utilizing professionals to carry out activities should be ascertained prior to carrying out any awareness campaign and appropriate budgets should be agreed. Resources for publicity campaigns may be available under central publicity or surveillance budgets from other government departments or agencies, inter-governmental bodies, or the trade directly. These resources may be provided in the form of advice, materials, or co-funding.

6.3 | Technical resources

IT tools, social media, and telephone hotlines may facilitate reporting, arising from increased awareness. IT tools such as interactive websites, and apps may help to target reporting and reduce the incidence of false alerts. Suitable video equipment in combination with modern technologies such as unmanned aerial vehicles (i.e. drones) can be used for video clips.

6.4 | Information resources

Availability of good resource materials such as photographs, illustrations, video footage, maps, and datasheets is critical for any awareness campaign. These materials are used to prepare information leaflets, posters and video clips, or miscellaneous products such as badges and postcards. Specimens or models of the pest itself or of symptoms can be particularly effective. Quarantine risks are likely to preclude showing specimens of the live pest, but some pests can be shown encased in resin or in entomological boxes, for example.

Availability of good quality representative images of quarantine pests (including symptoms, preferred host plants) that have never been seen in a particular country requires an effective network at international level. Even so, for some pests (e.g. some EPPO A1 listed pathogens, such as potato smut [*Thecaphora solani*]), it may be difficult to obtain images.

7 | LEGAL CONSIDERATIONS

Legal authority, liability and constraints need to be clear to all parties. Access rights of official inspectors to act on suspicion of a regulated pest should be clearly defined and defensible. Attention should be paid to not to reveal private information.

8 | COLLABORATIONS AND PARTNERSHIP WORKING

In planning an awareness raising campaign for professional operators, wider collaborations should be considered. Considering the geographical extent of the campaign and the audience, collaboration with adjoining administrations (e.g. local, national) or other stakeholders may need to be implemented. Stakeholders (e.g. trade and producer associations), whose sectors may be affected by the campaign, can also help to ensure that the right messages are communicated effectively to their members and to their members' customers. In some settings, such as markets, depots, distribution centres, auction sites, seaports and airports, it may be possible to include messages on plant pests alongside other campaigns on regulations such as animal health and invasive species.

Partnership working takes this concept one step further with a more formal agreement to work together on a campaign. It is important to understand that messages coming from an NPPO might be better received by an audience if they are conveyed through a source that they trust and perceive to be 'on their side'. Working closely with a trade body can allow messaging to be tailored to have maximum impact to their members, improving stakeholder insight relationships. It may also have the advantage of cost reduction through shared resources and using partners communication channels. However, it is necessary to understand the motivations of any partner and to ensure that the campaign messaging is not distorted or conveyed in unhelpful ways (e.g. media releases or published statements that have not been discussed). It is advisable that strategies are put in place in advance to counteract possible messaging distortion.

9 | PRACTICAL WAYS TO RAISE AWARENESS OF PROFESSIONAL OPERATORS INVOLVED IN PLANT CULTIVATION AND TRADE

9.1 | Message

The general message that will be conveyed by the campaign should be well thought through and clear to the NPPO and possible partners involved in its elaboration. The format, message and languages of all communication materials should be adapted to the target audience. The wording of key messages should be carefully chosen, and clear. In most cases, short messages are preferable to lengthy ones. A communication plan that has been

developed together with representatives from trade bodies can lead to better targeting of communications and maximize the use of partner communication channels. Delivery through trade / advisory body seminars and workshops can really help build networks and relationships across different sectors.

Examples of messages:

- Agricultor: proteja su cultivo ('grower: protect your crops) in Spain.
- La prevención es tarea de todos ('prevention is everybody's task') in Spain.
- Nyitott szemmel a nem honos károsítók ellen! ('open eyes against non-native pests!') in Hungary.
- Plantes en danger ('plants endangered') in France.
- Riskier's nicht! (Do not risk it!) in Austria.
- Sicherheit für den Pflanzenhandel! (Keep the plant trade safe!) in Austria.
- Nicht-heimische Schädlinge gefährden unsere Pflanzen (non-native pests threaten our plants) in Germany.

9.2 | Pre-prepared resources

A literature survey prior to any awareness campaign can save resources and avoid repetition. Numerous smartphone applications along with web pages and databases dedicated to plant pests are available for purchase, subscription or freely available, and, if from a reliable source, will aid a campaign. Examples of useful pre-prepared sources are provided in Appendix 1.

9.3 | Images

High quality images of the pest itself and its symptoms should be available. For some pests, these can be variable (e.g. for fungal pathogens such as the EPPO A1 listed Japanese pear rust [*Gymnosporangium asiaticum*] – the aecial stage on pear is significantly different to the telial stage observed on juniper). Clear photographs or drawings showing the range of symptoms on each host, including early stage symptoms, also helps to reduce the risk of overlooking the pest. Pictures of healthy plants, and of 'lookalikes' are useful for comparison. Drawings of life cycles are a good way to explain the pest biology and improve understanding. Examples of useful sources are provided in Appendix 2.

9.4 | Videos

Videos (see Figure 3) can be a useful resource to quickly and effectively raise awareness. Using video sharing platforms can attract large audiences. Care should be taken

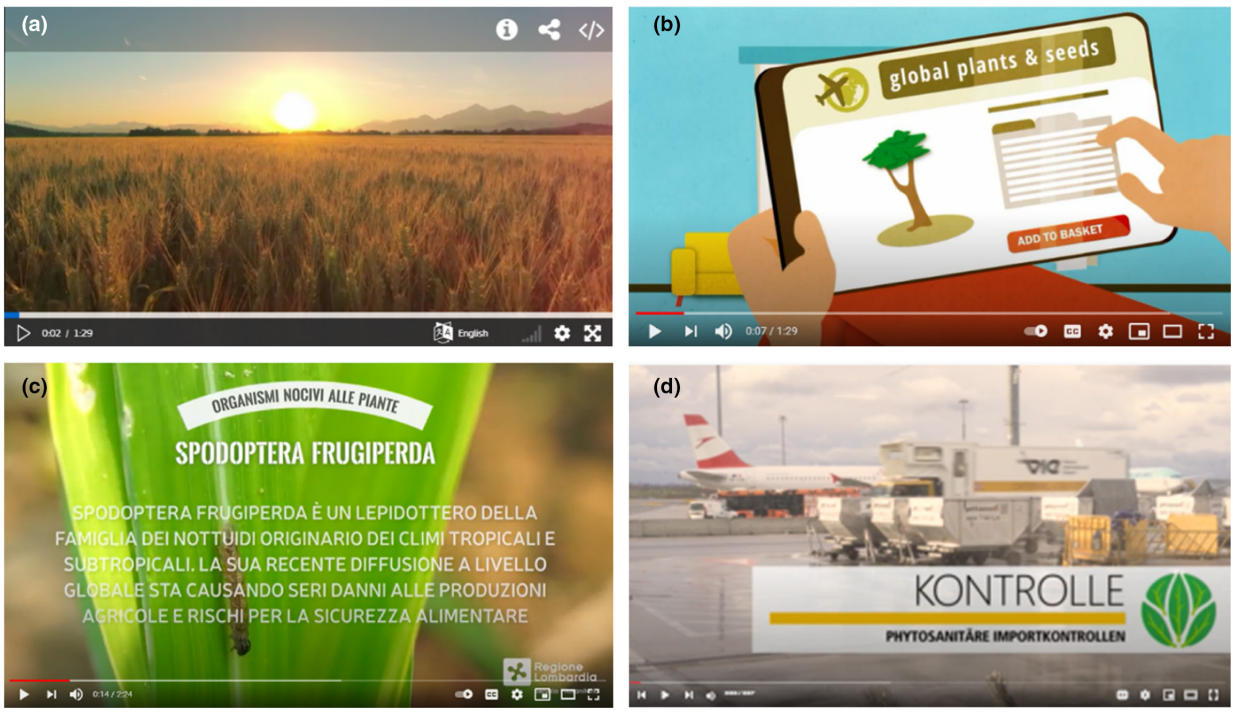

FIGURE 3 Examples of videos. (a) 'Plant health in the EU'. https://audiovisual.ec.europa.eu/en/video/I-193020?lg=OR. (b) JKI: Safe purchase of plants on the Internet: https://www.youtube.com/watch?v=rqmF-BMoKCc. (c) Spodoptera frugiperda – video prepared by Regione Lombardia (IT) to alert producers of maize, rice and vegetables. https://www.youtube.com/watch?v=S6ZgE0vohXc. (d) Phytosanitary import inspection – video prepared by the NPPO of Austria to explain how import controls are carried out at the Vienna airport. https://www.youtube.com/watch?v=NPYUzcvYGy0&list=PLR7SjaVR2HuMfJfKQ37Xj9AAhBvj6-2pq&index=13

with the title and tags to ensure that videos are found through Internet searches. If videos are to be displayed at events, they need to be generally short (30 s to 2 min) and in a repeated loop. In such a case, consideration should be given to whether audio is needed or not. For social media, videos should be not more than 30 seconds and of a suitable format and size. If necessary, split the material between a number of short videos with similar titles.

9.5 | Posters and information leaflets

Posters and information leaflets are useful in awareness raising campaigns. In some cases, it is useful to prepare them simultaneously using similar visual material, as these documents can complement one another. Some documents can also be prepared in such a way that they can be used either as a poster or as a leaflet. In some situations, professional operators require more detailed information leaflets, including outlines of pest risk analyses alongside the "short and snappy" information to aid their management approaches and this should be recognized when planning a campaign.

Posters (see examples in Figure 4) can be designed in various sizes (from A3 to several metres wide), to be printed on paper (e.g. on laminated paper to be more durable) or displayed on screens. Posters should be 'eye-catching' and should show only limited critical information that can be read quickly. For example, posters have commonly been used to raise awareness about specific and local pest problems, inform the trade about potential future risks and achieve early warning. Posters can be placed in staff break rooms, workshops, and other communal areas so that familiarity with a pest can be achieved.

Information leaflets (see examples in Figures 5 and 6) are not always required in a paper form. The advantages and disadvantages of paper versus electronic format should be considered when preparing them. The content of information leaflets should be well-crafted, i.e. succinct, clear, accurate and compelling. A map of host plants or recent spread may be helpful. Effective awareness campaigns use a range of styles and sizes to portray the messages, from large poster size sheets to postcard or business cards. For each pest, consider a few key points with the most important mentioned first, and if the campaign has an additional behavioural change element, a few points highlighting the simple steps that people can take to reduce risk of introduction or spread of pest may be added. It is a good idea for each point to stand alone and not be reliant on any of the other points.

For any information leaflets, it is good practice to issue a similar style for each pest covered, i.e. font, titles, text order and wording. Plan information resources wisely. It may not be practical to print many thousands of leaflets for a pest that is not present in a region, or for which key scientific evidence is not available, as this can lead to the necessity to reprint, thus involving extra time and costs. It is useful to also have more detailed leaflets that can be given to those who are seeking further information about a pest. These can include links to external resources, smartphone applications, databases (e.g. CABI compendia, EPPO Global Database). All information leaflets should contain guidance on what to do if a pest is found.

9.6 | Newsletters

Care should be taken not to overload people with information and attempt to convey complex technical detail in a newsletter. A clear layout that highlights the most important points and directs the reader to further information can be effective. It is important to consider the accessibility needs of the reader in terms of layout, font and language/terminology used. Newsletters that highlight seasonal or topical pests can increase engagement when timed correctly for the season or buying/trading cycle.

An example of newsletter is shown in Figure 7.

9.7 | Citizen science projects

In some countries, there are established citizen science projects which may be an effective way to engage professionals that have an interest in contributing to wider scientific study. Using resources produced by these activities, both promotes the project and reduces the impact on resource. For example, in the United Kingdom, the social science project PhytoThreats (Figure 8) enables individual growers and retailers to contribute their site data to better understand the distribution of *Phytophthora* species across the United Kingdom. Professionals may also volunteer to assist with training days aimed at the public where they can share their skills and knowledge as is the case for the citizen science project Observatree in the United Kingdom.

9.8 | Media and social media

Official information on pest findings will usually be issued in a press release following well-established national procedures. Various channels can be used (e.g. newspapers, newsletters, TV, radio, websites) to convey and elaborate on the information in the news release. Mailing lists for specific interest groups, either held by governments or stakeholders, can usefully supplement these channels. Examples are presented in Figure 9.

For rapid distribution of information, either on new outbreaks, new campaign approaches and updates, social media can be an effective resource. A careful balance should be ensured between the speed of publication on social media and checks of accuracy. It may be

FIGURE 4 Posters used in the United Kingdom to raise awareness of botanical gardens and rose producers about rose rosette virus

FIGURE 5 Leaflet on Spodoptera *frugiperda* prepared by Regione Lombardia (IT) to alert producers of maize, rice and vegetables

FIGURE 6 Leaflet prepared by the junta de Andalucia (Spain) on *Trioza erytreae* (vector of huanglongbing) inviting citrus producers to look for symptoms, to use healthy planting material and report any suspicious symptoms to plant health authorities

Pflanzengesundheit aktuell

Dezember 2021

Nachweis der Braun-geflügelten Zikade (*Pochazia shantungensis*) in Baden-Württemberg und deren Einstufung als potentieller Quarantäneschädling

Bereits im Sommer 2021 wurde an einem Catalpa-Baum mehrere Individuen einer Zikade gefunden. Der Catalpa-Baum wurde nach bisherigen Recherchen im Mai 2021 von einer Baumschule in Oberschwaben aus Italien zugekauft und dann an eine Privatperson weiterverkauft. Allerdings wurden lediglich an der Pflanze bei der Privatperson diese Zikaden gefunden und nicht in der Baumschule, so dass der Ursprung unklar ist. Obwohl der Verdacht schon früh auf die Braun-geflügelte Zikade (*Pochazia shantungensis*) fiel, war die Diagnose recht schwierig, da Referenzmaterial nicht verfügbar war und es in der Fachwelt einige Unklarheiten bezüglich der Taxonomie bzw. Artbenennung gibt. Da dies auch bei möglichen Verwechslungsarten der Fall ist, ist eine klare Abgrenzung schwierig. So erfolgte erst im November 2021 die Bestimmung als *Pochazia shantungensis*.

Es wird vermutet, dass die Zikade in Oberschaben nicht überwintern kann, trotzdem ist für das Jahr 2022 ein Monitoring geplant, um sicher ausschließen zu können, dass es zu einer Ansiedlung des Schädlings kommt.

Das Julius Kühn-Institut hat aufgrund des Nachweises in Baden-Württemberg eine Risikobewertung durchgeführt. Die Risikobewertung wurde am 7. Dezember 2021 veröffentlicht. In dieser Risikoanalyse wird aufgezeigt, dass *Pochazia shantungensis* eine Vielzahl an Wirtspflanzen befällt. Die EPPO nennt 200 Wirtspflanzenarten aus sehr unterschiedlichen Familien, wobei hierzu auch wirtschaftlich bedeutende Obstarten (z. B. Apfel, Heidelbeere, Pfirsich) sowie Wald- und Ziergehölze zählen. Die Klimabedingungen sind in Deutschland für eine Ansiedelung und Ausbreitung von *Pochazia shantungensis* zwar eher weniger geeignet, aber es kann nicht sicher ausgeschlossen werden, dass eine Ansiedelung in wärmeren Gebieten Deutschlands auch im Freiland möglich ist (z. B. Oberrheingraben, Kölner Bucht). Eine Ansiedlung in subtropischen, südeuropäischen EU-Mitgliedstaaten wird für sehr wahrscheinlich gehalten. Wegen des hohen Schadpotenzials der Zikade für viele wichtige Wirtspflanzen stellt *Pochazia shantungensis* insbesondere für südliche/subtropische Mitgliedstaaten ein erhebliches phytosanitäres Risiko dar. Deshalb stuft das Julius-Kühn-Institut *Pochazia shantungensis* als potentiellen Quarantäneschädling nach Artikel 29 der Verordnung (EU) 2016/2031 ein. Damit ist *Pochazia shantungensis* in Deutschland durch nationale Notmaßnahmen geregelt. Der deutsche Pflanzenschutzdienst soll demnach Maßnahmen zur Bekämpfung und Tilgung ergreifen.

adulte Zikade und Häutungsreste von Nymphen aus Oberschwaben

Foto: O. Zimmermann, LTZ Augustenberg

Aus Italien liegen bislang keine Informationen des Pflanzenschutzdienstes vor, dass dort ein Auftreten der Braun-geflügelte Zikade bekannt wäre. In Frankreich tritt die Zikade seit 2018 auf. Es ist bislang nicht bekannt, dass der französische Pflanzenschutzdienst Tilgungsmaßnahmen ergriffen hätte. Allerdings soll im kommenden Jahr das Monitoring verstärkt werden und möglicherweise werden dann auch Tilgungsmaßnahmen ergriffen. Die

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Baden-Württemberg

FIGURE 7 Newsletter "Pflanzengesundheit aktuell" [plant health update] produced by the Landwirtschaftliche Technologiezentrum Augustenberg in the region of Baden-Württemberg (Germany). The newsletter is published every 3 months but special issues can be sent for urgent matters. https://ltz.landwirtschaft-bw.de/pb/,Lde/Startseite/Arbeitsfelder/Internationales%20Jahr%20der%20Pflanzengesundheit%202020

appropriate to allocate social media correspondence to a few trained and trusted key individuals who are checking other social media for repetitiveness or correcting errors.

Collaboration and information sharing, including 'lines to take' with trade associations and grower groups might help to control to a certain extent the accuracy of the information that is spread via social media and widen the audience.

9.9 | Display equipment

Special events such as exhibitions, conferences, meetings, trade fairs and trade shows related to plants or the environment, as well as open-days of NPPOs and laboratories, can provide useful opportunities to engage with the trade and other professional operators. During these events, specifically designed display equipment is useful to attract the attention in a marketplace where a high standard of exhibit is expected. Pop-up back-drop displays are easily transportable and can have a considerable impact when displaying images and messages. 'Pop-up' displays can be pre-printed with your own designs or made of carpet-like material that enables interchangeable images to be easily fixed on it. Pop-ups are often modular and can come as single or multiple units. In some cases, these modular 'pop-up units' can be reused in full or in part for different events.

Other useful resources include models which enhance awareness campaigns and act as focal points for conversations.

FIGURE 8 PhytoThreat: A social science project involving plant nurseries and traders to better understand the distribution of *phytophthora* species across the United Kingdom and prevent their spread

9.10 | Presentations

Presentations and training either at events or stand alone to groups require additional resources, such as suitable buildings or spaces, projectors, screens, pointers, microphones. The organization by NPPOs of training courses or workshops for professionals (e.g. growers, landscapers, traders) are useful as presentations focus on the biology, symptoms, geographical distribution of specific pests or important groups of pests, as well as on control measures including legal requirements when producing and trading plant material. These courses have a 'train the trainer' and 'multiplying' effect as the participants are spreading the information to their colleagues and business partners. Consideration may be given to subsequently use training material prepared for these verbal presentations for e-learning purposes.

When preparing a presentation:

- Have a clear aim and objectives.
- Know your audience and use good communication techniques.
- Choose the most appropriate approach: webinars, conferences, workshops, in field (on the job), role playing, management games, case studies, group discussions, lectures, simulation exercises.
- Prepare material according to the time allocated and remember to leave time for questions.
- Prepare clear take-home messages or summary of the most important points.
- Consider the inclusion of an assessment of what the audience has understood from the presentation.

9.11 | Trade shows/fairs

Multiple audiences may be targeted at trade events to great effect. A study in the United Kingdom in 2018 found that 82% of the horticultural trade surveyed attended at least one horticultural trade show a year. Exhibiting at trade shows offers an opportunity to communicate about plant health and pest risks to the plant trade (import/export/buyer) at the point where they are making trading decisions. This reflects the behavioural economics concept of a timely intervention.

Figure 10 presents an example of a stand in a trade fair.

9.12 | Activity initiation form

When considering whether a particular event will be of value and identifying resource requirements, it can be helpful for the primary individual who has identified the opportunity to complete a form to answer the following questions:

- Date and time of event.
- Location.
- Key contacts.
- Anticipated audience.
- Key messages.
- Has the event been done before (where, when, outcomes)?
- Potential links with other organizations/citizen science projects.
- Staff resource requirement.
- Equipment resource requirement.
- Is there a statutory requirement to carry out the awareness activity?
- Approval required (internal/external/national/international).

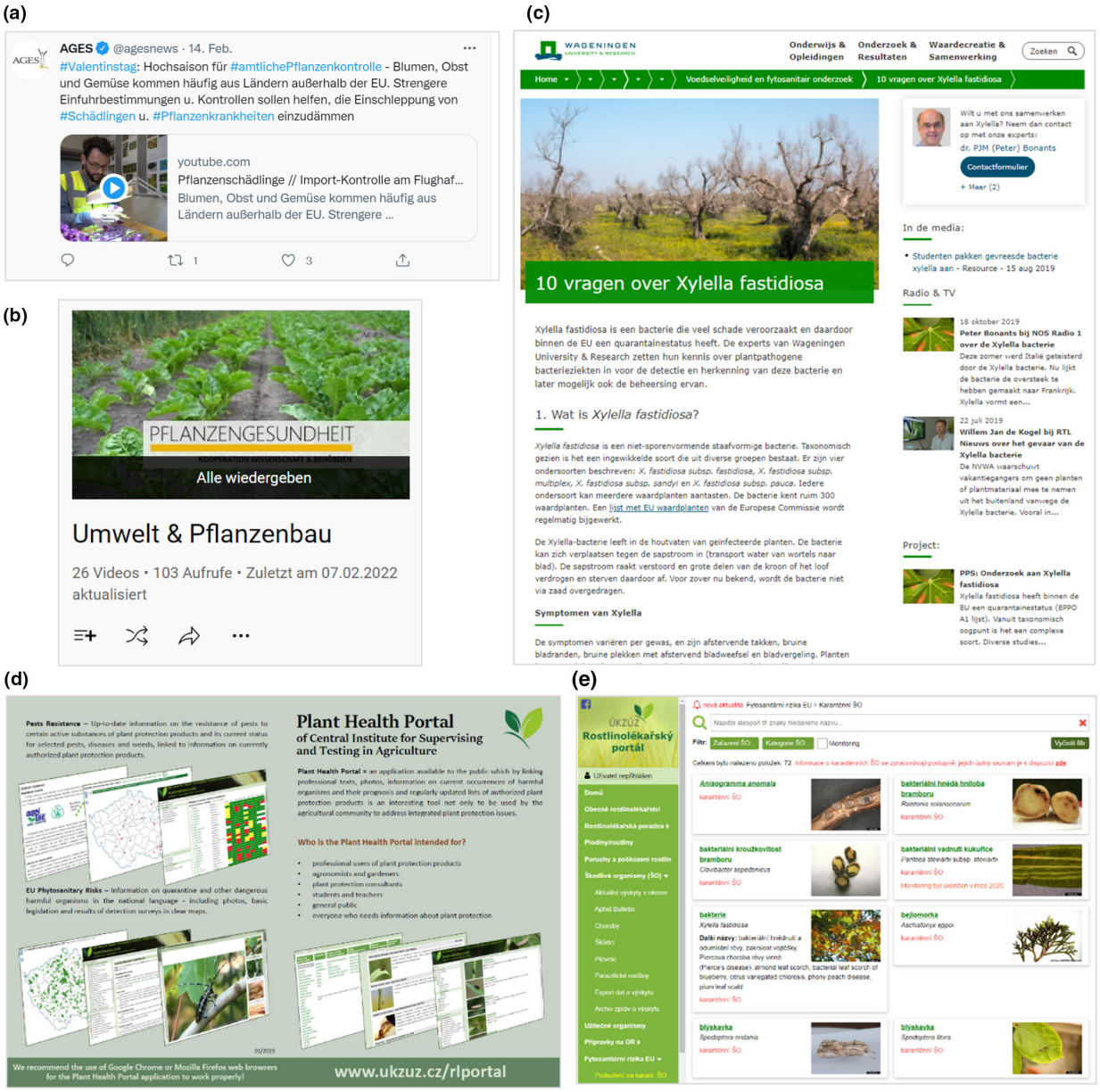

FIGURE 9 Examples of awareness raising activities illustrating this section (e.g. media, social media). (a) A tweet from the @agesnews channel (AT) on Valentine's Day about the import control of cut flowers on the Airport of Vienna (Austria). (b) The YouTube channel agesnews (AT) with various videos on the topic environment & crop production (including plant health, import inspection, surveys, diagnosis) https://www.youtube.com/playlist?list=PLR7SjaVR2HuMfJfKQ37Xj9AAhBvj6-2pq. (c) 10 questions and answers about Xylella fastidiosa - Wageningen University & Research (NL). https://www.wur.nl/nl/Onderzoek-Resultaten/Onderzoeksinstituten/plant-research/Biointeracties-Plantgezondheid/Voedselveiligheid-en-fytosanitair-onderzoek/Tien-vragen-over-Xylella-fastidiosa.htm. (d) Plant Health Portal of the Czech Central Institute for Supervising and Testing in Agriculture is addressed to professional operators, students and teachers, and the general public. It provides many resources about plant health, including plant quarantine (datasheets on quarantine pests, survey results, and online forms to report findings). https://eagri.cz/public/app/srs_pub/fytoportal/public/#rlp|domu|uvod

- Potential impact.
- Evaluation (outputs and outcome). Notes: Outputs are: number of visitors, number of distributed leaflets. Outcomes are consequential changes of a campaign: a pest is subsequently reported by an attendee following an event, a behavioural change element is embedded in policy or code of conduct.

9.13 | Activity list and evaluation

Activities should be clearly planned and listed with a time schedule. This will facilitate the organization of the campaign, its monitoring and subsequent evaluation. Ideally goals set will be designed with evaluation in mind, it can be useful to set a baseline of knowledge and

FIGURE 10 Display equipment in Ireland

awareness so that you can demonstrate any uplift due to awareness raising activities.

When planning a campaign, decisions should be made about the methods that will be used to evaluate the different activities. Subsequent evaluation enables a consistency of approach to awareness raising events, ensures necessary questions are thought through at the start, identifies required resources, enables an audit trail detailing awareness campaigns and reasons why resources have been spent. Those leading in engagement and awareness raising can then see the bigger picture, set up working groups as required, and plan more effectively.

10 | REPORTING SUSPECTED FINDINGS

Reporting procedures need to be clearly defined, and highlighted throughout campaigns (e.g. on literature, displays, videos, apps, social media, or business cards). Identification, set-up and maintenance of a point of contact at national or other appropriate level (e.g. via an email address, website, or a manned telephone number) facilitates the reporting significantly. Resources need to be made available to ensure coverage throughout operating times, or diverted to other numbers, whilst retaining the single number as the point of contact. If nobody is available, an answering system should be in place which highlights any follow-up actions that will occur. Any contacts should be recorded. Phone conversations should also be recorded either electronically (with prior permission from caller) or written. In some cases, stamped pre-addressed envelopes can be provided to those where a written response is expected. Although this will add to the cost, the benefits are that more people are likely to engage when there is no direct cost to them, and reduces the risk of errors when writing return addresses. Provision of a specific, easy to type and memorable reporting email address should also be included on any materials. Ensure any follow up with the reporting individual occurs as soon as possible.

Reports from professional operators should ideally include photographs of the pest or symptoms seen, the hosts affected, details of location, and the date and time of the sighting. Professional operators should not normally be encouraged to take samples, which should be a responsibility of official services, but may be encouraged to isolate suspect plant hosts, discourage access to affected areas, apply traps (e.g. sticky/pheromone) to capture adult beetles in a secure container, pending a visit from an inspector.

Some reporting mechanisms allow the use of e-forms to rapidly capture information including for example automated location details from GPS systems. A system developed in the United Kingdom referred to as Tree-Alert (http://www.forestry.gov.uk/treealert) enables anyone with access to the free web-based app to report United Kingdom plant health issues.

Information collected will be collated and ascertained whether it is accurate and appropriate (which may involve the necessity for a laboratory diagnosis). Dependent on the quality of information received, further educational awareness activities may be needed. The team receiving all information should be well trained and capable of assessing the impact of the new information received and take action, as appropriate, using contingency plans if they exist, available literature (including online information), updated scientific knowledge (e.g. via laboratories, academics, professional societies or expert working groups), and the network of national and international colleagues, particularly those who may have more information pertaining to a particular pest (e.g. regions that have the pest). The team needs to ascertain if the report is accurate, trustworthy, sufficient, timely, relevant, not repeated, or if further information is required. Finally, only the pertinent, relevant information is summarized and used to take the appropriate next steps.

Where a high level of awareness is achieved, the absence of reports may also provide supporting evidence of the absence of a pest from an area (but determination of pest status is outside the scope of this Standard). Appropriate responses to an individual reporting are dependent on the nature and content of the report. This could range from nothing (if, for example part of a large-scale campaign with numerous active participants with a final or dynamic online 'live' report where data from all individuals can be viewed in one location e.g. on a map of recorded findings), to a telephone call seeking further information or samples through a site visit with the individual. The latter may be appropriate, particularly with sensitive sites/findings.

Reporting mechanisms should be reviewed periodically to assess which ones are most effective and whether any adjustments are needed.

Examples of awareness material to support pest reporting and of a online form are presented in Figures 11 and 12.

FIGURE 11 Leaflet prepared by the ministry of agriculture of Greece on the citrus whitefly *Aleurocanthus spiniferus* inviting citrus producers to look for symptoms, to use healthy planting material and report any suspicious symptoms to plant health authorities

11 | RISKS

There are always associated risks when engaging non-officials in plant health activities. These include:

- Inaccurate information: Experience has shown that pest reporting is generally done in good faith, however there are occasions where malicious reports may be given (e.g. for commercial gain). During awareness raising, ensure that clear, concise, and up-to-date information is readily available and include details of similar looking pests/symptoms. Identifying trade organizations who are willing to engage and help with activities and provide additional training (e.g. outbreak site visits to show field symptoms) can also help reduce numbers of inaccurate reports.

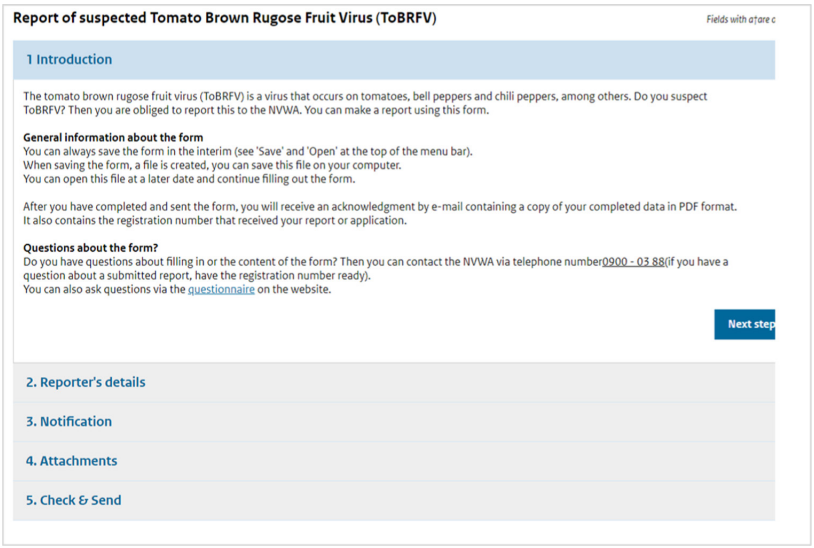

FIGURE 12 General public and professional operators are encouraged to report any suspicious findings of tomato brown rugose fruit virus via the Dutch NPPO website. https://www.nvwa.nl/onderwerpen/tomato-brown-rugose-fruit-virus-tobrfv

- Raising questions about the pest and action being taken. A set of 'Frequently Asked Questions' with agreed answers should be prepared for use by all those involved in the campaign. Examples of the sort of questions which should be addressed are shown in Appendix 3.
- Overloading of information from keen individuals or groups. Depending on resource availability particularly during activation of a contingency plan following a pest outbreak, there could be an influx of information which could over-stretch resource availability and become unmanageable. Clearly defined requests, simple reporting systems and targeted request campaigns can help mitigate this.
- Health and well-being: Associated health risks need to be ascertained when requesting individuals to seek out particular pests. Risks and liability should be evaluated, for example if somebody was injured when looking for a pest, e.g. climbing trees, (e.g. searching for oak processionary moth caterpillar – with associated human health affects). Weather effects, such as heat and cold should also be considered.
- Competing activities: Clashes with other groups carrying out similar campaigns could occur if prior investigation of national / regional approaches towards a pest are not examined.
- Raising expectations of effective action to control the pest where this may not be possible in all parts of the area targeted by the campaign. Messages need to be transparent and realistic about what can be achieved.
- Political sensitivities: as pests do not respect political borders, there are potential risks of misunderstandings. Clearly communicating plans for publicity campaigns to neighbouring countries will help to mitigate these.
- Effects on trade: Certain findings and the way in which they are reported can have a profound impact on local or international trade. Campaigns should respect national rules on data protection and freedom of information. They should normally avoid naming sites and businesses and be expressed in more general geographic terms.
- Reputational risk to business – highlighting specific problems in an area where there are only a few growers could identify the affected grower and impact their business.
- Media: Local or regional media may pick up on activities and report inappropriately which can have a severe negative impact on the current campaign and any future campaigns. Agreed answers to frequently asked questions (see Appendix 3) will help to mitigate this risk, and information about ongoing campaigns should be easily accessible (e.g. on the NPPO website). Unless the relevant persons have undergone media training, it is good practice to refer any media requests through to the media team of the relevant Ministry or agency.

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APPENDIX 1 - POSSIBLE SOURCES FOR LITERATURE SURVEYS

EPPO Platform on Communication Material: https://media.eppo.int

EPPO Global Database: https://gd.eppo.int/

EPPO Platform on PRAs: http://pra.eppo.int/

CABI Compendia (only the Invasive Species Compendium is free access): https://www.cabi.org/publishing-products/compendia/

CABI abstracts (subject to fees): https://www.cabi.org/publishing-products/online-information-resources/cab-abstracts/

EFSA opinions about pests and pest survey cards: https://www.efsa.europa.eu/

Official pest reports on the IPPC website (https://www.ippc.int/).

Internet search engines (searching for specific pests).

APPENDIX 2 - POSSIBLE SOURCES OF PEST AND PLANT IMAGES

EPPO Global Database: https://gd.eppo.int/

Bugwood (University of Georgia, US): https://www.bugwood.org/ImageArchives.html

USDA-ARS Photo gallery on flickr (album plant protection and quarantine): https://www.flickr.com/photos/usda-aphis/albums/72157684996642396

APPENDIX 3 - EXAMPLES OF FREQUENTLY ASKED QUESTIONS (FAQS)

The questions listed below are not meant to be exhaustive but are only examples given to help NPPOs when preparing FAQs. These questions have to be adapted to the pest concerned and to the phytosanitary situation that is being faced, as well as to the targeted audience.

About the pest itself

What is <pest x>?

Why is it harmful to plants/plant products/environment?

Is it dangerous for humans or animals?

About its host plants and damage

Which plant species/plant products are affected?

What are the symptoms/damage?

What are the economic/social/environmental impacts?

About its geographical distribution

Where is it from?

Where is it present now?

About its epidemiology

How does it spread?

How can the pest reach my country/production site?

What are the main pathways for its introduction and spread?

Which are the vectors (if appropriate)?

What is a disease vector?

About the measures that are taken

What are the management options?

What is being done to prevent entry and spread of the pest?

What is being done to control/contain/eradicate the pest?

Why is it worth investing so much effort in controlling the pest, instead of letting nature dealing with it?

About what professional operators could do to help

How, where, and when can I observe/find the pest?

As a nursery worker/farmer/trader what should I do?

Whom should I contact in case of a finding?

Where can I find more information?