JRC Response to Comments submitted by Member States to the presentation on priority pest identification methodology

Sánchez, B.

Barreiro-Hurle, J.

Rodriguez-Cerezo, E.

March 2018

Joint Research Centre

CONTENTS

INTRODUCTION

Following the presentation given by JRC at the Expert Group on *Plant Health Legislation – Discussion of the Delegated Act on Priority Pests* in Brussels on 16th of January 2018, the Member State's representatives were asked to submit comments in writing regarding the methodology proposed to identify priority pests (see Annex I). By the 21st of February (deadline for submitting the comments), eight Member States provided specific remarks about the proposed methodology:

1. Finland - FI (13/02/2018 - see annex II);
2. Denmark DK(14/02/2018 - see annex III);
3. United Kingdom UK (15/02/2018 - see annex IV);
4. Sweden SE (16/02/2018 - see annex V);
5. Germany DE (16/02/2018 - see annex VI)
6. Netherlands NL (19/02/2018 - see annex VII)
7. Ireland IE (19/02/2018 - see annex VIII)
8. Spain ES (21/02/2018) - see annex IX)

As part of the process towards the development of a JRC Technical Report presenting the methodology which is due in spring 2018, the JRC technical team has reviewed the comments and identified where additional clarification or modification to the approach is needed. In addition questions that were related to EFSA's inputs have been cross-checked with the EFSA team[1]. This document provides a detailed response to the comments provided. The full text of the comments is provided as annexes (see above). Several of the doubts, comments and suggestions are common to two or more submissions, the JRC has grouped them as deemed appropriate in order to summarise response. When presenting the grouped comments each specific comment is identified with the name of the Member State and transcribed literally in italics.

In line with the transparency spirit behind the development of the methodology, the document is distributed to all Member State's representatives in the Expert Group. The views expressed are purely those of the authors and may not in any circumstances be regarded as stating an official position of the European Commission.

Comments are grouped into two main categories: (I) general comments on the methodology and (II) indicator specific comments.

---

[1] Stancanelli, G., Kaluski, T., Mosbach-Schulz, O., Tramontini, S.

I. GENERAL COMMENTS

Need for full JRC Methodology Report to assess proposal

[FI]
To understand and to be able to comment the methodology profoundly the member states would need the technical report on the methodology. It would be really much appreciated if the technical report would be delivered to member states as soon as possible.

[DK]
However to fully understand and thus give detailed comments to the method, more information is needed, e.g. the full technical report.

[SE]
Generally it is not possible based on the information available in the power point presentation by JRC to understand in any detail what the indicators will include and how the indicators will be measured. This is a major obstacle for evaluating the model. However, it is possible to comment on the overall approach as well as seemingly missing elements.

As mentioned during the presentation, the JRC aims at publishing the methodology as a JRC Technical Report. A first draft of this report, including the methodology and the identification of indicators, will be made available to the MS Expert Group on Plant Health by spring 2018.

While this first draft will consider the comments put forward during this consultation, the JRC remains open to further refinements after the release of this first draft before publishing it.

Bias due to indicator identification and to the aggregation approach

[DK]
Denmark is worried, that the same issue can be weighted under more than one indicator, and thus be given a higher impact than wanted. E.g. production impact and employment impact will in some cases be mutually dependent, and thus get a 'double' score, even though they handle the same issue. It is unclear what the consequences will be if such a "double scoring" occurs and whether it may be undesirable.

[UK]
A comment is also made about slide 11 in particular – it does look as though a pest with a high economic impact, but lower social and environmental impact could be considered not a priority. If this is not the case, the numbers and boundary between priority and non-priority need some further explanation.

[SE]
The requirement in article 6.1 b) in PHR is formulated as follows "their potential economic, environmental OR social impact is the most severe…" whereas the description of the JRC model indicate that the values from the three main categories will be summed to obtain the overall

score. The text formulation in PHR could be understood that if a pest has a most severe impact in one of the main categories (non-additive model approach), then the pest would qualify directly as a priority pest.

For most pests we consider that the additive method would be the best approach (but see exceptions below). The disadvantage with the alternative approach where the pests are rated based solely on the main category within which they have their strongest impact is that e.g. a pest with a very high economic impact and no social and environmental impact would be ranked higher than a pest with only slightly lower economic impact and high impact within the other categories (Fig. 1).

If the interpretation of the formulation in article 6.1 b) is that it is enough if a pest has the most severe impact in one main category then the additive method may exclude pests that according to the PHR should be included. One approach to make sure that a pest with a maximum impact score in one of the three main categories (i.e. economic, social or environmental impact), ends up as a priority pest is to include a threshold value within each main category for which pests that receives a higher score directly qualifies as a priority pest.

The procedure to use an additive method to calculate the overall impact score is not restricted to the three main categories but also applies to the calculations of and between the subcategories. Since the estimations of the different types of impact to a high degree is based either on yes or no questions or on counting, e.g. the number of affected animal and plant species, the model will likely benefit pests with a broad rather than a narrow but high impact. The key concern is that it appears highly unlikely that a pest with an extreme impact within one or a few of these subcategories where the significance of the impact is not assessed quantitatively will end up on the list of priority pests (Fig. 2). For example, a pest that, if established in EU, would be likely to cause extinction of a high number of native species without economic or social importance would not end up on the list of prioritized pests. To be able to implement such a procedure it would be valuable to evaluate how the model scores a species with a very narrow impact, e.g. Agrilus planipennis affecting ash trees.

[NL]
The developed method envisages a combination of multiple indicators into a single "Impact indicator (IIQP)". A threshold will be applied to determine whether a pest is identified as a priority pest or not. We would like to emphasize that a threshold should be set in such a way that it results in the identification of a limited set of priority pests which would allow NPPO's, growers, foresters and the general public to focus their efforts on those pest whose potential economic, environmental or social impact is the most severe in respect of the Union territory.

Finally, we would like to underline the importance of a balanced final list of priority pests with respect to the various important host crops and tree species across the different climate zones in the union territory. Many indicators are balanced towards food production, while specific references in (EU) 2016/2031 on disappearance of important tree species receive less attention than would be expected on the basis of the legislation.

[IE]
The weightings to be assigned to the particular indicators in each of the sub groups of environmental, social and economic impacts will be significant in deciding the final list of priority pests and we look forward to further updates on this process.

In order to tackle the unbalanced selection of indicators under each of the three main headings and dimensions (i.e. four dimensions and 12 indicators for economic impacts versus three dimensions and six indicators for social impacts) a hierarchical weighting approach is proposed. In this sense the full weight is split among the three main

headings, the weight of the heading is split among the different dimensions and the weight of the dimension in split among the indicators.

For example, if equal weights are assumed for the three main headings (i.e. 33%) the fact that there are four dimensions in the economic impact and three in the social has no impact on the overall importance of the heading. The same applies across dimensions when one dimension has several indicators and other just one.

It is true that to construct certain indicators some common parameters (e.g. area) are used. However this is just a reflection on the concept mentioned in the Regulation. The importance of a pest in terms of production and in terms of employment has to be taken into account and both depend on the area affected. This does not mean that we are double counting any indicator even when these might be (highly) correlated.

In principle the methodology does not consider decision rules; it is just a ranking. With this ranking any decision rule can be implemented.

Definition of weights and treatment of uncertainty

[FI]
The general aggregation of different types of impacts into IIQP is clear from slide 10. However, the way in which the indicators (w1.1-w3.4) are calculated is not explained, and therefore commenting this part of the methodology is not possible.
The weighting of different factors largely determines the outcome of the prioritization. Therefore, special attention should be paid to the elicitation of the weights from the legislators. In the presentation, no details about the elicitation are given, and therefore it is not possible to comment that part of the process.

[DK]
It is unclear how the weighting of the indicators and the weighting of criteria within one indicator is managed. Will W1, W2 and W3 always weigh 1/3 each or will this differ according to the pest in question? Will JRC manage all weights or will Member States as legislator have a say in certain cases? If yes, in which cases and when, should Member States comment on this? Denmark wishes a draft layout of the proposed weighting by JRC, before input is given to this.

[UK]
Mention was made during the meeting of weighting behind different indicators and requests were made for more information on this. At the moment it's not clear how the different sub-categories combine to produce the "W" sub-indicators e.g. I.7, I.8, I.9, I.10, how do these combine to make W1.3? Absence of this kind of detail makes the overall approach difficult to comment on and we welcome the opportunity to view the full report which was mentioned during the meeting.
Overall, the aims of having more and better data on impacts are an ideal. In many cases the ideal data does not exist, and this will make the assessment difficult to apply in a homogenous manner.

[SE]
As regards the question of how uncertainty is included in the model, it is stated that "Uncertainty incorporated via sensitivity analysis – Impact on pest selection of weights and

data quality" (slide 8). It seems like the program @RISK will be used to calculate the uncertainty distribution based on the available data and expert elicitations (EFSA presentation, slide 14). Exactly how the uncertainty distributions of each parameter will be combined in JRCs model is however not clear.

As regards the weighting of the indicators and the different components of the model, it is stated that the weights for the indicators relating to the sub-category "Production impacts" will be set by legislator(s). This is the first category described in the presentation and we assume that this also applies to the other subcategories although it is not stated. Further, the impact of weighting options on the pest listing (selection for priority) will be analyzed using a sensitivity analysis. Presumably the main purpose of the model is to provide a tool that allows legislators to weight the different categories of potential impacts according to how important they think the different aspects are. In other words, the model should be transparent enough to help legislators to weight the different types of impacts against each other.

[DE]

Last slide of production impacts: The use of weights set by Legislator(s) is mentioned. It is proposed to involve the Member States in the setting of weights.

For uncertain indicators it should be examined whether they are clearly useful for the outcome. Indicators based on more or less uncertain estimates do not only affect the assessment of the respective pest. They are even more of importance when they are included in the IIQP, ranked and compared as shown in slide 11 to distinguish between priority and non-priority. Therefore we think it is necessary to analyse also the uncertainty for every IIQP and to make it transparent for the final ranking.

First of all let us make clear that slide #11 served as a simplified illustration only for presentation purpose. In that sense, the slide assumed equal weights for all sub-indexes.

The JRC's task will be to present a methodology that can be applied with any set of weights put forward by the legislator (risk manager). In addition, the methodology will show how impact of weighting decisions changes the final ranking through sensitivity analysis.

Regarding uncertainty of impacts, JRC will simulate different scenarios in the sensitivity analysis based on the EFSA probabilistic distributions of data that feed the parameters.

Relationship between indicators and legal provisions of Regulation (EU) 2016/2031

[SE]

It is sometimes difficult to judge which of the criteria in Annex 1, Section 1 and 2 of the Plant Health Regulation (PHR) that are the base for some of the indicators presented in the model. It is stated in the presentation that each criterion should be linked to the associated indicators by a code (slide 9). This is an excellent idea but the codes are not used in the presentation.

Some of the indicators appear to have changed focus compared to the criteria given in the PHR. For example in the criteria b (iii) only the impact on tree species are included whereas in the model also impact on other hosts is included in the corresponding indicator (Cultural heritage importance). This means that also pests affecting non-tree hosts will score in this

indicator. This change in focus may result in that pests of trees will receive a relatively lower ranking than they would otherwise obtain. But how significant this effect will be in the end will also depend on how the indicators are combined in the model. Possibly there are other criteria that has been included resulting in the broader description of the indictor in the model. This is however difficult to evaluate based on the available power point presentation.

Limited data for some of the parameters that will be assessed will cause high uncertainties. However, since different pests differ significantly in the type of impact they cause the effect of the weighting of parameters and precisely how the parameters are defined will probably have a much larger impact on the final ranking than the uncertainty associated with the lack of data.

The following criteria listed in Annex 1 section 1 point 4 does not seem to be included anywhere in the JRC model:

"(c) costs of replanting and/or losses due to the necessity of growing substitute plants;" This cost does not appear to be directly included in any of the indictors, but it may possibly be included in the indicator "additional producer cost". Replanting of street trees is for example associated with considerable costs. Thus, if this criterion is not considered, the impact of pests that mainly cause damage on tree species commonly used as street trees may be underestimated.

"(f) effects on native plants, biodiversity and ecosystem services;". The impact on native plants is included in the indicator 'Damage/mortality of native plants'. But only protected animals (and plant species) are included in the indicator 'Losses of biodiversity and wildlife'. Thus, negative impact on native animals, that are not "protected", as well as other organism groups (e.g. fungi) are not included. These organisms should be included since they are a vital part of the biodiversity. Moreover, the impact on ecosystem services is limited to effects on "water erosion" and "soil carbon stocks" which is related to the following point;

"(o) changes in ecological processes and the structure, stability or processes of an ecosystem, including further effects on plant species, erosion, water table change, fire hazards, nutrients cycling;". In the proposed indicators the following factors from the criteria are missing; water table changes, fire hazards and nutrient cycling. Moreover, it is unclear why the indicator "soils carbon stocks" has been limited to only soil and why aboveground biomass has been omitted.

"(p) costs of environmental restoration and prevention measures;" This could possibly be included as part of the indicator 'Public expenditure' but it is not clear from the available presentation if this will be done and if so how.

"(s) effects on water quality, recreation, tourism, landscape heritage, animal grazing, hunting, fishing". Water quality does not appear to be included in any indicator.

[NL]

As stated in the presentation, indicators were identified by a systematic review of the regulation in section 2 of Annex I and the criteria under 4(a) in section 1 of Annex I of (EU) 2016/2031. At this stage, we only have access to these criteria and the resulting indicators and limited insight into the translation of the criteria into the indicators. In spite of this limitation, we will try to provide useful feedback on the methodology.

During the presentation we did not have the opportunity to present the correspondence between indicators and regulation criteria. A tentative correspondence table is included below, subject to further scrutiny. Please note that we have not made a direct correspondence between one criteria and one indicator. Some criteria are covered by multiple indicators and some indicators correspond to multiple criteria. For example, the indicator "*production loss*" covers AI S1 4(a) and AI

S1 4(i) criteria and AI S1 4(j) criterion is covered by indicators #5 and #6. Our proposal makes sure that at least each criterion is covered by one indicator.

The decision of choosing a particular indicator is based on data availability across pests and MS, this might lead to situations where *better* alternative indicators could be considered, but their applicability would be limited, if not impossible.

Table: Summary of indicators and the related Regulation criteria for assessing the economic, social and environmental impacts

Economic impacts		Indicators	Regulation criteria (ID)
Direct economic impacts	Production impacts	I.1 Maximum production loss	AI S1 4(a); AI S1 4(i): AI S1 4(g)
		I.2 Share of MS affected[2]	AI S1 4(a)
		I.3 Additional producer costs	AI S1 4(b); AI S1 4(c); AI S1 4(d); AI S1 4(h);
		I.4 Difficulty/ Ease of eradication	AI S1 4(h); AI S1 4(p)
Indirect economic impacts	Price and market impacts	I.5 Percentage of change in prices	AI S1 4(j)
		I.6 Trade intensity	AI S1 4(j)
	Trade impacts	I.7 Export losses	AI S1 4(k)
		I.8 Share of production traded	AI S1 4(k)
		I.9 Export network	AI S1 4(k)
		I.10 Trade concentration	AI S1 4(k)
	Impacts in other agents	I.11 Public expenditure	AI S1 4(l)
		I.12 Upstream and downstream effect	AI S1 4(i)

Social impact	Indicators	Regulation criteria (ID)
Impact on employment	I.13 Employment loss	AI S1 4(r); AI S2 b(i)
Impact on food security or food safety	I.14 Caloric supply	AI S1 4(q); AI S2 b(ii)
	I.15 Protein supply	AI S1 4(q); AI S2 b(ii)
	I.16 Fat supply	AI S1 4(q); AI S2 b(ii)
Impact on recreation, landscape or cultural heritage	I.17 Degree of diversification	AI S1 4(s); AI S2 b(iii)
	I.18 Cultural heritage and landscape importance	AI S1 4(s); AI S2 b(iii)

Environmental impact	Indicators	Regulation criteria (ID)
Impact on street trees, parks and natural and planted areas	I.19 Damage or mortality of ornamental and street plants and trees	AI S1 4(e)
Environmental and other undesired impacts of control measures	I.20 Undesired effects of control measures	AI S1 4(m); AI S2 c(ii)
Impacts on native plants, biodiversity and ecosystem services	I.21 Soil erosion	AI S1 4(o); AI S2 c(i)
	I.22 Damage or mortality of native plants	AI S1 4(f); AI S1 4(o); AI S2 c(i)
	I.23 Losses of biodiversity and wildlife	AI S1 4(f); AI S1 4(o); AI S2 c(i)
	I.24 Soil carbon stocks	AI S1 4(o); AI S2 c(i)
	I.25 Protected areas	AI S1 4(n); AI S1 4(o); AI S1 4(s); AI S2 c(iii)

---

[2] See below as JRC proposes to change this indicator by an alternative one.

Differentiated approach to pests related to crops (annual and permanent) vs forestry hosts

[DK]
Comments on suggestion from JRC and EFSA on differentiated approach to pests related to crops versus forestry hosts: Denmark supports the suggestion to operate with two lists for the priority pests, one for crops and one for forestry.

[SE]
It seems appropriate in a first step to separate pests of crops and pests of trees. Some of the parameters that are included in the model will not be relevant for pests on crops, e.g. effects on ornamental and street plants, and some are not applicable for forest pests, e.g. food security impact. In addition, we suggest that the term forestry pest is replaced by pests of trees species to also include tree species not specifically used in forestry.

[DE]
The comparison of all priority pest candidates by their IIQP is a major advantage of the presented single approach. With different approaches it will be difficult to establish a ranking over all pests. Therefore we propose to gain more experiences with the different approaches during Task 2 and to decide before Task 3 on the definite procedure.

This issue has been further assessed via bilateral conversations with the MS that use both approaches in their pest prioritization methodologies.[3]

In principle we don't see any limitation in generating one or more lists per type of host or by using different weights or even indicator definition to best match the dynamics of pest impacts in crops versus trees.

At the forthcoming Expert Group meeting, we expect to provide evidence that will inform the decision to be taken by the legislator regarding this issue.

Lack of data availability on pests for the analysis

[UK]
Again there is a concern that there may be little data on some pests – and a lot of time may be spent trying to make the data collection uniform. It might be better to put resources into finding data and evaluating pests where there is more disagreement / uncertainty

---

[3] A brief summary of the discussions held with FI and NL on their specific pest ranking methodologies has been prepared by JRC and will be distributed in parallel to this document.

The IIQP is an interesting approach to identify priority pests, but data availability, weightings and relevance of indicators for single pest/host combinations are major challenging elements. Therefore we think it is necessary to include expert judgement to the calculation of the IIQP.

As a general remark, the number of indicators is high. One needs to collect reliable and accurate data for each indicator, while having many indicators does not necessarily result in a better overall impact estimate. We suggest a reduction in the number of indicators, for example by reducing the number of indicators which deal with market effects given that such effects are already partly taken into account when establishing yield losses.

JRC is aware that the proposed set of indicators poses challenges with regards to data collection and processing. However, the selection of indicators was done based on potential data availability thus we believe we will be able to secure the required data. Moreover, JRC is mobilizing the appropriate resources to obtain the data, as for example the *ad-hoc* request on forestry data circulated.

Moreover, once the pilot exercise is concluded, we will be in a position to see whether some indicators have to be discarded due to lack of data or irrelevance of the data obtained for the ranking process (i.e. all pests scoring the same for a specific indicator).

While a quantitative approach is being sought, we don't discard a situation where for a specific indicator expert knowledge will need to supplement or replace the quantitative information. In particular the approach used by EFSA to assess the impacts in the EU is based on available data and Expert Knowledge Elicitation.

Attention to specific characteristics of MS in the methodology

Denmark is worried that the methodology will not take into account the differences between Member States and we wish further elaboration from JRC on how this is taken into account. Regarding the social impact indicator, how are the different natural habitats rated within the EU? E.g. is it taken into account, that a beech forest in Denmark might have a different value that a beech forest in Italy?

The priority pest list is established based on EU regulations thus the output is reported at EU level. However, this does not mean that MS specificities are not taken into account. Estimates of the different indicators take into account as much as disaggregated data as possible to capture geographical diversity across MS or even regions.

Moreover, alternatives to official EU datasets are explored when EU wide data is not available such as the case for Cultural heritage importance (Indicator #18) or Losses of biodiversity and wildlife (Indicator #24).

Choice of pilot pests

[DE]
The current pilot pests are supported but they are linked in two cases to woody plants and all of them are not present in the EU. We suspect that the methodology would provide other findings, when herbaceous plants or pests present or partly present in the EU would be assessed.
Therefore we suggest including in addition Tomato ringspot virus because Pelargonium is a host of major economic importance, a representative of an herbaceous plant and of ornamentals produced under protection (at least in northern parts of the EU). An alternative could be also Clavibacter michiganensis subsp. sepedonicus or Synchytrium endobioticum as representatives for the special situation with partly present potato pests, which are of major importance in the EU.

[NL]
The method will first be tested on three pilot pests, being Tilletia indica, Xanthomonas citri and Agrilus anxius. Its application will then be extended to the 33 pests on the preliminary list. The three pilot organisms cover three different types of hosts and this therefore seems well chosen. All three pilot organisms are however monophagous, and thus far less challenging than polyphagous pests. For polyphagous pest, it will not be possible to analyse an exhaustive list of host plants. We would recommend to either set a limit on the number of hosts or to limit the analysis to hosts whose economic value is above a certain threshold. This requires further discussion in the Expert Group.

[IE]
In relation to the selection of Agrilus anxius for the pilot pest for forestry we would like to point to Agrilus planipennis as a more immediate threat to EU forestry crops. Recent reports suggest that Agrilus planipennis is currently spreading from eastern Russia to central Russia and further westward, while Agrilus anxius is currently confined to North America. It could be argued that the more imminent threat arises from Agrilus planipennis due to its current proximity and land connection (recognizing the threat of introduction through wood product import for both species).

The three initial pilot pests were chosen in agreement with EFSA and DG SANTE with the objective to cover the main types of host plants (annual crop *vis-à-vis* fruit plants, as well as forest plants).. Thus *Tilletia indica* (Karnal bunt of wheat) was chosen as a pest affecting mainly annual crops, *Xanthomonas citri* (Citrus canker) affecting permanent crops, and *Agrilus anxius* (Bronze birch borer) as affecting trees.

As mentioned during the JRC presentation, we are expecting to expand after the pilot application of the methodology to additional pests whose results will be presented at the next Expert Group meeting. The pilot testing phase will help to ensure the feasibility of the methodology and detect potential shortcomings.

With this extension of the methodology to additional pests we aim to identify challenges with regards to the methodology or any of its specific indicators, also in relation to polyphagous pests.

II. INDICATOR SPECIFIC COMMENTS

II.1 ECONOMIC IMPACTS

Indicator #1 - Maximum production loss

[SE]
Indicator 1.1 (Maximum production loss) - It is unclear how the maximum production loss is calculated for perennial crops such as forest trees or fruit trees. Probably this has not been decided yet since in the presentation by EFSA they list "Pest impact on annual vs. perennial crops e.g. trees" under the heading "Some of the challenges" (EFSA 2018). Anyway, this may not be a significant problem if agricultural crops and forest pests are analysed separately. An alternative unit to planted area to use for forests is to instead estimate standing biomass.

[DE]
I.1 Maximum production loss: Producer prices are different in the Member States. This should be reflected in the data. Furthermore: There are hardly any reliable data of production losses. Any estimation is associated with (in some cases high) uncertainties (see below).

[NL]
Indicator I.1. Maximum production loss. This indicator is based on host plant area, crop yield, yield loss and quality loss and takes into account those NUTS2 regions which are climatically suitable for the pest. We could not deduce from the presentation whether host plant area, crop yield, yield loss and quality loss are variables that are estimated for each NUTS2 region separately or whether these variables are assumed to be constant across all regions in which the pest can establish itself. We would like to underline the importance of having separate estimates for different climatic regions and soil types (e.g. soil texture) where relevant. Yields will very across the EU, while yield losses will decline towards the margins of the distribution area of the pest. Without separate estimates, production losses can be strongly overestimated.

[ES]
Because the data about yield and quality losses produced by the pest are, in many cases, only available from the origin countries where the pest occurs, it should be clarified the criteria used to estimate these losses in Europe. For instance, a 10% lost in USA are probably more problematic than 10% losses in less developed countries of Africa. It should be also considered these losses related to the profit margin of each crop. In other words, 10% losses may be 100% of profit losses in a certain crop but, only a little amount of the profit in other.

Maximum production loss is defined as the share of total production value in the potential area affected multiplied by the quantity or quality loss typically associated with pest outbreaks in a maximum spread scenario.

For tree species we are collecting data on production for permanent crops (i.e. citrus) per hectare (available in EUROSTAT) and on growing stock for timber producing trees (MS consultation and National forestry inventories). We are still considering how to deal with ornamental trees with regards to maximum loss, probably using a replacement costs approach multiplied by the number of trees. However, the feasibility of this approach is still to be confirmed.

As mentioned during the Expert Group meeting we believe that for comparability purposes the two (three if we consider ornamentals as a separate) groups will be analyzed separately in two rankings.

To construct this indicator host planted area, yield and producer prices will be collected by JRC at NUTS2 level for annual and permanent crops and at MS level for trees. EFSA will provide potential yield and quality losses estimates, using expert elicitation based on existing PRAs and cited scientific evidence. In addition to the technical report provided by JRC, the work of EFSA will be made public as a technical report including detailed information on data and methodologies for the estimations.

It is true that recital 4(i) in Section 1 of Annex I mentions impacts on producer profits, however due to lack of data we consider that impact on total production is a good proxy for both crop loss (recital 4(a)) and profit as the lost crop would not the associated costs of production. We note this concern and will try to check whether considering profits instead of production has an impact in the raking. The indicator would then be measured as production loss share of profits instead of as value of production loss in Euros. Please note that this again would introduce differences between annual and perennial crops and trees as the profit indicator is available for the former and not for the latter.

Indicator #2 - Share of MS affected

[UK]
Indicator 1.2 (Share of MS affected) - It is unclear why "Share of MS affected" have been included as a separate indicator in the model. From slide 15 it is clear that it will be measured as the number of NUTS2-regions which are climatically suitable for the pest (we assume that only NUTS2-regions that also overlap with the host plants distribution are included). Thus, it will not be a measure of the proportion of the actual land area of a MS that will be affected (Fig.). To some degree a measure of proportion of NUTS2-regions correspond to the share of people within a MS that lives within the regions which are climatically suitable for the pest. Measures where the number of people "exposed" to a pest in the area where they live have previously been used to evaluate for example the social impact of losses of street trees. But here it is used as one parameter to calculate the production impacts of a pest. The approach used in the model is to use NUTS2-regions as the assessment unit for measuring the "Share of MS affected" area but the actually share of land area in ha for example seems to be a better measure. Anyhow, an explanation of why this factor has been included is necessary.

[DE]
I.2 Share of MS affected: NUTS 2 regions are very different in size. Will EFSA deliver the number of regions or the sum of area (ha)? The sum of the area would be preferred.

[NL]
Indicator I.2. Share of MS affected. This indicator is not listed in Annex I and it is unclear why it should be listed separately. This indicator is already taken into account when e.g. calculating the indicator based on production losses. Based on the available information, we do not see a need for the inclusion of this indicator.

Indicator #3 - Additional producer cost

[DE]
I.3 Additional producer cost: Especially in case of pests not present in the EU an estimation of the number of additional treatments and practices is not known and estimations are associated with high uncertainties (see below).

[NL]
Indicator I.3. Additional producer costs. The presentation lists the number of additional treatments and the number of additional practices. This indicator is probably deduced from points (4b) to (4d) in Annex I, being the "costs of control measures", "costs of replanting….", and "effects of existing production practices". First of all, it unclear whether cost of replanting is indeed included in the number of additional practices. Second of all, although the number of additional treatments is somewhat informative, the costs associated with such treatments and with additional measures are a much better indicator and also better in accordance with the text in Annex I.

[ES]
Other indicator to take into account to evaluate the additional producer cost related to the number of additional treatments/practices should be the profit margin of each crop, because crops with higher profit margin can support better the cost of additional treatments than crops with lower gains. For instance, in a crop where 10 treatments are normally needed, an increase of 3 additional treatments due to the presence of the pest that is being assessed represents a 33% increase in number of treatments and costs. Whereas another crop can exist that normally need only 1 treatment but, due to the presence of a different pest, an additional treatment would be required. Consequently in this crop a 100% increase in treatments and costs will be produced. Without considering this additional data, if comparison is made between the two pests, the first one that requires 3 additional treatments seems to have a more priority than the other that only needs an additional one and consequently, in the evaluation process, will receive a higher punctuation. However, the second pest increase in production costs is higher than the first one. Consequently, without using this additional parameter, part of essential information to compare between pests may be missing and some

pest could be underestimated.

While we acknowledge that the proposed indicators would be a better representation of the criteria 4(b) "costs of control measures", 4(c) "*costs of replanting and/or losses due to the necessity of growing substitute plants*", and 4(d) "*effects on existing production practices*" and partly 4(h) "*…. changes to producer costs or input demands, including control costs*..." of section 1 of Annex I the lack of data and uncertainty related to the exiting makes us favor an objective proxy.

EFSA will support the JRC with the assessment at NUTS 2 level of the need for additional treatments, and/or, when applicable, additional forest/cropping practices for the control of each pest, but not with the cost.

If there were to be huge differences between the nature of the additional treatments or management practices we could envisage an approach where these could be weighed based on expert opinion with regards to the costs (i.e. low cost, middle cost and high costs would be multiplied by 1, 2 and 3 respectively when constructing the indicator additional producer costs). In this manner a pest with three low cost treatments of practices would be equal to a pest with one high cost treatment of practice; however we assume the reader notices the additional subjectivity being introduced into the construction of the index using this approach.

Indicator #4 – Difficulty/ease of eradication

[FI]
It appears that in the model the relationship between the difficulty of eradication and priority is positive and linear (= the more difficult the eradication, the higher the priority). However, if the pest is very hard (=practically impossible) to eradicate, the measures that are taken to manage the risk of the priority pests (i.e. information to the public, surveys, contingency plans, simulation exercises, and action plans for eradication) are very unlikely to be successful. Consequently, targeting such measures to such pests would be a waste of resource. Instead of a simple positive relationship, a threshold could also be defined, above which pests do not qualify as priority pests, since "the priority pest measures" are very unlikely to be effective against them.
On the other hand, difficulty of eradication as such is not mentioned in the Plant Health Law as a criterion for priority pests. Therefore, it is not clear why it has been selected to be an indicator. If the intention is to use the difficulty of eradication as an indicator of control costs, it seems to be overlapping with the point 1.3 additional producer costs (slide 18).
If the host is perennial vs. annual affects the cost of eradication but it does not (always) affect the difficulty of eradication, since perennial herbaceous plants may be as easy to destruct and replace as annual herbs. If the idea is to account also for the cost of eradication, the average time after which the plants are normally replaced with new ones, could be used as an indicator. Alternatively, woody vs. herbaceous might also be an indicator for the difficulty of eradication measures.
These could be added to parameters used to assess the difficulty / cost of eradication:
The ability of the pest to survive without a host plant for long periods (e.g. over at least one growing season)

Production in greenhouse vs. outdoors, or the proportion of greenhouse production

[SE]
Indicator 1.4 (Difficulty of eradication) - It is stated that this is still under development, but it is currently explained as a classification based on "polyphagous pest vs monophagous; perennial vs annual hosts; presence of asymptomatic infections vs not presence; natural spread rate". It would be interesting to obtain more information about this indicator as to what criteria it refers to, e.g. criteria (h), and whether this will be a dichotomous variable or whether the costs involved will be quantified.
We regard this indicator 1.4 as important and possibly deserves more focus by lifting up the indicator in the model hierarchy? We believe this indicator also might be of relevance for other subcategories within economic impact, as well as for social and environmental impact.

[NL]
During the meeting, JRC explained that the probability of establishment is not directly taken into account in the impact indicators. In addition, capacity for spread plays a limited role in the impact analysis and might only be included in indicator 1.4 (difficulty of eradication). The reasoning behind this choice would be that impact is evaluated in a maximum spread scenario. However, existing initiatives for identification of priority pests (pest ranking projects) tend to take probability of establishment and/or spread into account. These are key factors that also determine the speed at which the maximum impact will be reached. A low spread capacity allows for mitigation measures and development of new measures (E.g. resistant varieties, new plant protection products) and will thus affect the real impact of a pest. Because it is easier to quantify spread capacity than probability of establishment we recommend that spread capacity plays a decisive role in indicator 1.4.
Indicator I.4. Difficulty of eradication. This label suggests that the highest impact should be attributed to those pests that are difficult to eradicate, thus by default attributing a high priority to those pests that have already established itself in a part of the union territory and can no longer be eradicated. For pests that are already present, costs of containment measures should be taken into account. Such costs can be considerable and should be weighed against the costs of alternative scenarios/measures. Difficulty of containment is perhaps a better label. As indicated above, we feel that capacity of spread is a key factor for identification of priority pests and is indicative for the speed at which the maximum impact will be reached.

[ES]
When evaluating the difficulty of eradication it should be also considered the feasibility of adopt the phytosanitary measures needed.

Thank you for your comments. The indicator is still under construction and we will take your comments and suggestions into consideration when defining the final indicator.

1.2 Price and market Impacts (Indicators #5 and #6)

[NL]
Indicator I.6. Trade intensity. Point (4k) of section 1 in Annex I lists that effects on domestic markets should be taken into account. Hence, the percentage of change in prices (indicator I.5)

makes sense. We could not deduce why trade intensity should be included as a separate indicator. Perhaps trade intensity will affect domestic prices, but this does not justify the inclusion as a separate indicator. In addition, it is not clear from the presentation whether these effects are measured in the presence or absence of control measures. This requires clarification.

[ES]
To evaluate the trade intensity, the "worst case" scenario is not a realistic way, due to, in this regard, the crops with a high value and with a wide crop area are always the most affected by the pest. The more realistic scenario, the one that have a higher probability according to expert judgment should also be considered.

The impact of prices depends on two dimensions. While Indicator #5 considers the change in production availability taking into account trade in a static manner, indicator #6 qualifies this impact based on the possibility to dampen the impact of prices via trade. For example a big change in prices (Indicator #5) would be more important if we don't trade the product (indicator #6) as we could not source additional production from other countries to compensate for the reduction in domestic supply.

The I.5 Percentage change in prices includes domestic production plus imports minus exports plus the production losses for a maximum spread scenario, based on the environmental conditions and management practices occurring at the time of the study. In principle EFSA will provide information considering that only control measures that already exist are in place.

1.3 Trade impacts (Indicators #7, #8, #9 and #10)

[FI]
If "quantity of imports" and "quantity of exports" refer to actual imports and exports (and not to trade between EU member states) a large part of trade, which is essential to the economies of many member states, is excluded. If trade from an infested member states to other member states can be restricted due to presence of quarantine pests, also EU-trade should be taken into account in the indicators.

[DK]
It is not clear from the presentation, whether or not the chosen criteria under 'Economic impact' take the trade within the EU into account or only considers export and import with third countries?

[UK]
For many of the area planted/import/export indicators: What time period is being used? Will it be the same for all crops and all pests? Individual commodities can vary a lot from year to year, often in response to one another (global prices fall, imports go up, the next year's EU crop area goes down for annual crops – or the trees aren't felled for another year or two for forestry). So the time period needs to be long enough to even out annual fluctuations. This will also be the case with producer costs, there can be great variation, and different chemicals may be used in different parts of the world. However, the time period also needs to be short enough

to take into account long-term trends in crops as planting material changes over time.
For quantity of exports (I7 & I8), is the possibility of re-export recognised? This might also affect import data unless net import data were calculated.

[SE]
Indicator 1.9 (Export network) - It is unclear why it matters how many countries EU export a specific commodity to. It would make much more sense to quantify the total export value and disregard the number of countries that is receiving the commodity.

[NL]
Indicator I.7/I.8/I.9/I.10. At a first glance, there appears to be some redundancy in the number of indicators which deal with the effects on export markets. Export effects have been given much more weight in the indicators developed by JRC than under point (4) of section 1 in Annex I. E.g. why is there a need for separate inclusion of the share of production traded? and why is there a need for separate inclusion of trade concentration? Regarding the export network, the presentation indicates that this is based on the "number of trading countries importing from EU a specific commodity affected by the pest (based on pest presence and quarantine status)". It is not entirely clear was meant by this label. Is this the number of importing non-EU countries in which a specific pest has the quarantine status? Does this indicator take price elasticity into account and that the effects of bans can be mitigated by shifting towards alternative markets or towards domestic supply and reduced reliance on imports? Does the indicator take into account that relatively straightforward phytosanitary measures (crop inspection, tests) may restore market access (depending on the biology of the pest)? We would like to suggest the combination of the export related indicators into a single well developed indicator.

[ES]
In addition to total production, quantity of exports, price of exports and maximum production loss, it should be also considered the cost and time required to reopening the trade with those third countries which previously banned it because of the pest, the economic importance of the market loss and whether if it is a single market (only one country) or a lot of them.

Exports and imports are taken into account only for extra-EU (trade with third countries). Re-exports are not accounted for as we don't take into account intra-EU trade (i.e. imports via the Netherlands that are then further shipped to Germany).

The four indicators give independent measures from each other; we try to capture all potential effects on trade from the pest outbreak. The indicator #7 Export losses provide a direct measurement on the total value of the total amount of production that is not acceptable to be exported due to trade restrictions. Irrespective of the total value of export losses, the impact of a pest with regards to a commodity will be higher the higher the share traded as this production will lose its export markets and will need to be sold domestically (Indicator #8). Independent of the share of production exported, the structure of trade network is also important as the higher the countries we export to the more problematic it will be to reach agreements of recognition of control measures (Indicator #9). Last, if trade is with many countries but only a few cover a high share of total exports the negotiations could be focused on those countries (Indicator #10).

The analysis is static and indicators are calculated as the average of the last 3 years to avoid any abnormal trading fluctuations.

Indicator #11 - Public expenditure

[DE]
I.11 Public expenditure: Expenditure for research and control programs is difficult to estimate and associated with high uncertainties (see below).

[NL]
Indicator I.11. Public expenditure. This most likely is a combination of point (4b), (4h) and (4l) of section 1 in Annex I. Will it be feasible to quantify this indicator by using data or will it be based on entirely on experts opinion? Public expenditures clearly are important, but does this indicator vary between quarantine pests and significantly alter the ranking/prioritization of the pests? It seems likely that the introduction of any quarantine pest will require allocation of resources to control programs and research. If so, is it useful to include this indicator?

[ES]
The sentence "Research and control programmes expenditure" should be changed to "Research and control programmes (including surveillance and analysis) expenditure".

We take note of these concerns. Indeed if the pest is unknown additional research will always be needed and there is no clear way to assess which type of pests would need more research than others. If this would be the case all pests would score the same value for this indicator and no discrimination based on it would be possible.

While no final decision has been taken yet, even when 4(l) in Section 1 of Annex I explicitly mentions additional research and advice, it might well be that this indicator might be discarded based on the justification above.

Indicator #12 - Upstream and downstream effect

[SE]
Indicator 1.12 (Upstream and downstream effect) - It is not clear from the presentation what this refers to and it is not clear which criteria in the new PHR that this corresponds to. Regardless, it seems like an extremely vague measurement to use number of sectors and it would be better to try to quantify the total indirect economic impact in monetary terms.

[DE]
I.12 Upstream and downstream effect: It is unclear what is covered by this indicator.

This indicator relates to criteria 4(i) "*effects on producer profits…*" when considering that primary agricultural production is also an input (i.e. food industry, feed industry, bio economy) and demands inputs (fertilizers, machinery, etc.) from other sectors.

The actual measurement of indirect impacts is difficult to calculate without relying on assumptions, since most of data are aggregated and not related to specific crops or forestry species.

We use the specific Social Accounting Matrix (SAM) for EU developed at JRC to measure the indicator #12 "*Upstream and downstream effect*". The EU SAM is a harmonised dataset built as an extension of traditional input-output tables which integrates all relationships among institutional sectors, productive activities, goods and services and production factors. This approach allows a systematic measurement equal for all pests of socio-economic effects among the different sector that are related to the combination host/commodity-pest.

To avoid the impact of area in this indicator we count the number of sectors which have input-output relationships for approximately 44 agricultural and forestry products.

II.2 SOCIAL IMPACTS

Indicator #13 - Employment loss

[SE]
The indicator 'employment loss' is stated to be limited to employment related to different production systems and do not appear to also include "…industries related to those sectors, including tourism and recreation;" as stated in the criteria in Annex 1 section 2 point b (i). This indicator seems not to cover sufficiently the criterion in PHR, as effects on tourism and recreation (e.g. in forest) are important effects.
Indicator 1.13 (Employment loss) - The proposed model for calculating employment loss implies that MS with a higher degree of mechanization in their production systems will in general have a lower estimated social impact for this indicator compared to MS with a low degree of mechanization (per unit produced). The value of the indicator will largely depend on how the value of the "labour needs for production (AWU/ha)" is calculated. Will it be calculated at the level of NUTS-2 regions or will it be based on the average value at the EU level?

[NL]
Indicator 1.13. Employment loss. This indicator is composed of the host planted area, production loss, production and labour needs. Do production losses directly translate into employment losses and if so, is it a simple linear relationship? Until a certain threshold, there might even be positive effects of a pest on employment (need for additional measures), but once the threshold is reached at which production of a particular crop is no longer economically viable, effects on employment can be devastating, but not necessarily so when that crop is replaced by an alternative crop with a different labour need. How will these considerations be translated into the indicator?

[ES]
Other indicator to take into account should be the concentration of employment loss, since the impact of the pest on employment loss should be considered higher if it is concentrated in small areas than if it happens scattered in the whole EU territory, where more employment alternatives may be available.

Employment loss refers to the reduction on the number of persons needed for the crop, horticultural or forestry production when has been affected by a pest and can be partially reduced or totally lost. The employment loss is estimated in terms of reduced labour use per activity for each individual host affected by a pest. Indeed it is calculated as a simple linear relationship for the number of employees lost due to production losses.

While it is true that there might be other indirect employment losses, we believe that these are already captured in Indicator #12 Upstream and downstream. Moreover, the importance of tourism and recreation related losses to qualify a pest as priority are addressed in Indicator #17 Degree of diversification.

Employment losses will be calculated at NUTS2 level, but aggregated at EU level since this is the final output of the analysis.

We don't consider the additional employment due to the outbreak in the analysis as this would go contrary to the spirit of the Regulation. If we understand correctly higher impact would generate higher employment in control activities, however it seems a bit counter intuitive include as a (positive) impact those jobs. Moreover, as the analysis is static we do not include any assumptions related to replacement by alternative crops or activities.

2.2 Food security/ food safety impacts (Indicators #14, #15 and #16)

[DK]
Is caloric, protein and fat supply the best way to measure impact on food security and food safety? In an EU setting, this is not problems citizens of the EU encounters.

[UK]
Food security/safety impacts: Crops vary according to variety, suitability of habitat, etc. e.g. most maize in the UK is fodder crop as sweetcorn varieties grow less well here. If using FAO statistics for calorific value etc., which are likely to vary according to the exact growing conditions and cultivar, is it possible to correct for European data?
Biofuels may skew the figures?
The food measures are not applicable to forestry/tree species (unless fruit/nut crops).

[SE]
Indicators 1.14, 1.15 and 1.16 (caloric, protein and fat supply)
We are wondering about the significance of these indictors in the model. Our interpretation is that these indicators will be estimated as the proportion of the total consumption of calories, protein and fat that is potentially lost due to a pest. The indicators appear to be largely derived from standard food security indicators found for example at FAO (http://www.fao.org/faostat/en/#data/FS).

[NL]
Indicator I.14/I.15/I.16. Grains, potatoes, fruits and vegetables are important ingredients of the daily menu because they e.g. provide carbohydrates, fatty acids, fibers, iron, proteins and vitamins. By focusing on overall calories, crops like grain and potato will yield high impact scores relative to e.g. apples and peppers. Is that representative for the importance in the daily menu?

[ES]
In addition to caloric, protein and fat supply, it should be also considered other nutrients which provide health benefits, such as vitamin C, folates (vitamin B9) and omega 3.

This indicator is not measuring the importance of commodities in the daily menu or the food composition, but on food security. Food security is a multidimensional concept but normally approximated (due to data availability) by the three main macronutrients (i.e. energy, protein, fats) from all commodities (including fruits, vegetables). The indicator reflects the food consumption patterns and the production loss caused by a pest outbreak can reduce the availability of some of the commodities

which are supplying fundamental food energy and macronutrients (protein and fat) for human consumption in the EU.

Data are gathered from FAO statistics and are available for the EU. We use MS data of the commodities related to the host affected by the pest and which are supplying fundamental food energy and macronutrients (protein and fat) for human consumption in the EU and could affect human welfare.

Regarding the comment on the non-applicability of this indicator for tree species, this further reinforces the option of having different rankings for pests affecting annual and permanent crops versus those affecting trees.

Indicator #17 - Degree of diversification

[UK]
I.17 on degree of diversification does not, appear to be a discriminating indicator. The text ends "… by region – common to all crops". It may just be the wording and our misinterpretation, but if it is genuinely the same irrespective of hosts, why include it?

[SE]
Indicator 1.17 (Degree of diversification)
Presumably this indicator corresponds to criteria (s) in Annex 1 section 1 point 4 "effects on water quality, recreation, tourism, landscape heritage, animal grazing, hunting, fishing." But, it is unclear what is actually meant by the description of the data from Eurostat that will be used. In addition, the explanation that the indictor is 'common to all crops' is very confusing.

[DE]
2. Social impact/ 2.3 Recreation, landscape etc./I.17 Degree of diversification: We would need more information about the objective of this aspect and the type of data required to understand this indicator and comment on it.

[NL]
Indicator I.17. Degree of diversification. The text in the presentation indicates that this indicator is based on the share of diversification of production by means of other gainful activities (recreation, tourism, landscape, fishing and hunting) by region – common to all crops. This indicator probably links to point (4s) of section 1 in Annex I, but from the provided information we cannot deduce how this indicator (share of diversification) translates into the effects on water quality, recreation, tourism, etc.

The proposed indicator on degree of diversification makes reference to the reduction of other gainful activities related to the cultivation of groups of crops (i.e., specialist field crops; specialist horticulture; and specialist permanent crops). The definition of the EUROSTAT indicator refers to activities such as: tourism, handicraft, aquaculture, wood processing in farms, contractual work using equipment of the holding and

processing of products other than farm or forest primary ones. Data is available by region or MS[4].

More specific or disaggregated data for measuring these concepts (i.e. water quality, recreation, tourism, landscape heritage, animal grazing, hunting, fishing) can be difficult to find in a comprehensive and standardized way for all hosts-pests and EU regions

However some of the topics mentioned in the comments are addressed in other indicators. For example Indicator #26 "protected areas or conservation areas" tries to capture the role of specific crops or trees on areas more vulnerable and which are essential for biodiversity and maintain relevant ecological processes - including water quality. If the crop or tree is a key element in those areas (measured by the total area of the crop in such areas or if not available by the presence or not of those crops in the description of key habitat in the Habitats Directive) a pest outbreak in that crop would have a negative impact on the main ecological processes of the system, including the water quality. More resilient areas/systems are not needed to be included in the indicator since large impacts are not expected.

In addition, Indicator #18 "Cultural heritage importance" encompasses the countryside and natural environment, which enriches and maintain biodiversity, as well as the important role that these places can have in tourism and recreation. See below.

Indicator #18 - Cultural heritage importance

[UK]
Unesco and Commodities with protected designated origin may be quantifiable, but it is unclear how useful they will be in practice.
We are not sure the current indicators fully account for recreational use of the landscape. One idea: something like the number of tourists per country/NUTS2 combined with the forest area by country/NUTS2 (depending on data). We know that trees are an important part of peoples' landscape, and while "tourists" will be an over-count by including sun- or museum- type visitors (and quite possibly exclude visitors who don't leave their home nation), it is at least something which could be measured.

[SE]
The criteria in Annex 1 section 2 point b (iii) refers to "the disappearance of, or long-term large-scale damage to, important tree species growing or cultivated in the Union territory or tree species of high importance in terms of landscape as well as cultural or historical heritage for the Union.". The requirement of "long-term large-scale damage" is not included in the description of the corresponding indicator in the model, i.e. "Cultural heritage importance".

[NL]

---

[4] ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Gainful_activities_of_the_farm

Indicator I.18. Cultural heritage importance. This indicator seems somewhat farfetched. Is presence of a particular host in a UNESCO World Heritage site truly the best indicator of social impact? It is also not clear whether the number of UNESCO World Heritage agricultural or natural landscapes refers to the number in the EU or to the number worldwide. Many of these areas are so large that any host will be present to some degree. We would like to point out that the text in Annex I, section (2b) states that social impact includes the effects of "the disappearance of, or long-term large-scale damage to, important tree species growing or cultivated in the Union territory or tree species of high importance in terms of landscape as well as cultural or historical heritage for the Union". Thus, the 2016/2031 specifically refers to the impact on tree species. This aspect is not captured correctly in the current indicator, which is much more oriented towards agriculture rather than tree species and landscapes.

[ES]
Not only UNESCO World Heritage landscapes should be considered, but other important heritage plants, such as millennial trees, etc.

This methodology shall cover both groups of hosts: annual and permanent crops and trees. Our proposal is to use as an indicator the number of UNESCO cultural-natural landscapes in the EU related to the host/commodity-pest affected. We are exploring different standards for recognizing heritage importance or other social benefits provided by the Hosts/commodities, such as millennial trees, that can be available for gathering quantifiable information in a systematic manner to be considered part of the indicator.

The indicator does not include the concept of "long-term large-scale damage" as that would be captured in other indicators. For example, scale in all the indicators which use area of maximum spread for their calculation [i.e. maximum production loss] and term in the EFSA calculation of the probability distribution of those impacts.

The number of tourists would compensate the lack of data for indicator #17 for trees, however species specific data will not be available and the capacity to discriminate of this measurement would just be double counting the area of impact.

II.3 ENVIRONMENTAL IMPACTS

Indicator #19 - Damage / mortality of street plants

[FI]
It seems that impacts on park and street trees are taken into account only in social (slide 39: I.17 Degree of diversification, not clearly stated though) and environmental (slide 42: I.19 Damage / mortality of street plants) impacts, although the economic value of such trees can be substantial. Ideally, the economic impacts on park and street trees should be assessed so that they can be compared to that of crop and forestry plants (in slide 14: I.1 Maximum production loss).
The variables are said to be dichotomous, but the outcomes seem to have more than two levels (since it is written "Higher the.., higher the environmental impact and higher the priority"). Maybe the number of affected ornamental species, and boosted pests and diseases are taken into account (although that is not evident from the slides).
I.19 Damage / mortality of street plants - The use of dichotomous scale should be reconsidered, because the impacts to street trees vary from minor (e.g. discoloration of leaves) to major (e.g. quick death of the trees), which should be reflected in the outcome of the assessment.

[UK]
Street trees could be classified in social impacts as well as/instead of environmental impacts – I think this may have been commented on at the meeting.

Damage / mortality of street trees responds to the criteria (e) "*effects on street trees, parks and natural and planted areas*" listed in the Point (4) of the Section 1 of ANNEX I of the Regulation (EU) 2016/2031. Indeed, this indicator could be defined as social or environmental and the regulation does not specify whether they are one or the other. We believe it is more an environmental impact. However, the location of a specific indicator in one or another category should have no impact on the final ranking as the relative importance of the indicator would be captured in the dimension weight. For example if the legislator believes this is the most important criteria, then the dimension in which it is located should get a higher weight irrespective of the name given to it (social or environmental).

Although this indicator is still under development, the lack of economic and distribution data on park and street trees among MS in a harmonized dataset makes difficult its inclusion in a more quantitative manner (i.e. number of hectares of parks with a specific species or number of trees of a specific species). Up-scaling these data from limited evidence in one or more locations to EU level can lead to inaccuracy of the analysis. Thus from a pragmatic perspective, we will give more importance to this indicator if the pest can affect more park and street tree species as defined expert knowledge (this will be part of the ad-hoc consultation to MS on forestry data).

Indicator #20 - Capacity to boost other pests

[FI]
I.20 Capacity to boost other pests is rarely an environmental impact. Instead, the impact types (economic, social or environmental) of boosting other pests depend on the pest species that are boosted.

[UK]
Are there any examples of pests with the capacity to boost the spread of other pests – Assume this means they are vectors of other things, but is the risk then the pest, or the pest it is vectoring?

[SE]
Indicator 1.20 (Capacity to boost other pests) - The "capacity to boost other pests" probably refer to the following criteria in the PHR: "(g) effects on the establishment, spread and impact of other pests, for example due to the capacity of the pest concerned to act as a vector for other pests;" (Annex 1 section 1 point 4). However, most pests benefit other pests since attacked hosts tend to become more susceptible to secondary attacks, e.g. plants with fungal infections frequently becomes more vulnerable to insect infestations. Preferably a ranking scale should be used, e.g. low, medium and high, to avoid that the answer will become "yes" for almost all pests. At least the indicator should be rephrased to "…significantly boost…".

[NL]
Indicator I.20. Capacity to boost other pest. The term boost is less clear than the text in point (4g) of section 1 in Annex I itself, namely "effects on the establishment, spread and impact of other pests, for example due to the capacity of the pest concerned to act as a vector for other pests". Why not use the original text in the legislation? In addition, is this an environmental impact indicator or an economic impact indicator?

This indicator indeed refers to 4(g) of the Section 1 in Annex I. We acknowledge that "boost" is misleading and will use the actual wording of "*act as a vector of other pests*". Indeed the size of the impact of the (secondary) pest for which it is a vector should be taken into account.

We agree that this will not be necessarily link to environmental impact. It is indeed an indicator which is more related to the impact in terms of yield/plant losses, and it will therefore be considered by EFSA in that assessment.

Therefore, the final methodology will not include indicator I.20 as part of the environmental impacts.

Indicator #21 - Undesired effects of control measures

[DK]
Note that when it comes to the use of pesticides, Member States have varying rules and access to such. Denmark therefore wants to caution how impact of control measures, when it comes to pesticides, is rated.

Indeed all use of plant protection products would be in accordance to thresholds established by the current EU Regulation on active substances (Regulation (EC) No 1107/2009), the EU Regulation on maximum residue levels of pesticides (Regulation (EC) No 396/2005) and the specific rules of pesticides application set by MS/EU (Directive on sustainable use of plant protection products). Therefore by definition undesired effects have been deemed acceptable. However, this criterion is also included in the plant health Regulation [4(m) Section 1 and c(ii) Section 2].

To combine both perspectives we are working on some characteristics of control measures that could relate the undesired effects.

Indicator #23 - Damage/mortality of native plants

[FI]
The importance of the affected plant for the affected ecosystem should be taken into account in the indicator. That way the indicator could differentiate pests that would affect only one plant species from pests that could affect the whole ecosystem.

[UK]
For I.23 – damage/mortality of native plants: a dichotomous variable feels too blunt. To the question "does the pest negatively affect species of native plants", in all honesty the answer is often "Potentially". In this instance, it feels too blunt to force a Y/N answer, and an intermediate option may help guard against an answer with an inappropriate certainty, e.g. the pest feeds on a range of Asian species of Fraxinus; maybe it feeds on F. excelsior too, but no data are available. Is the answer yes (it feeds on the genus) or no (no documented feeding on the European species has been found)?

[SE]
The criteria in Annex 1 section 2 point c (i) refers to "significant effects on biodiversity…". This is not in correspondence with the model where a dichotomous variable is used to answer if "…the pest can negatively affect species of native plants.". Preferably this variable should be exchanged to a quantitative assessment or at least the question should be reformulated to "the pest can significantly affect species of native plants." in the indicator "Damage/mortality of native plants".

The importance of the affected plant for the affected ecosystem is rather taken into account by Indicator #24 "*Losses of biodiversity & wildlife*". We acknowledge your suggestions to reformulate the indicator and if possible to include a scoring scale of damage.

Indicator #24 - Losses of biodiversity & wildlife

[UK]
Number of protected animal and plant species associated with the habitat that can be affected. This is likely to be quite crude, and more detail may be needed. Obviously would

favour trees compared to crops, but some crop pests can have wider implications, and this may be harder to take into account.

Indeed this is a crude measure but the only one that can assure comparability across pests. We are exploring further possibilities to improve the indicators embedded within "3.4 Impacts on biodiversity and ecosystem services" by the Mapping and Assessment of Ecosystems and their Services (MAES) and other environmental standards with harmonized data available among MS.

The fact that one indicator "favors" crops and other trees is why we use a composite indicator methodology. All aspects are mentioned in the Regulation and are taken together contributing to the final ranking based on the importance granted by the legislator to each criterion / indicator using weights.

The "super" priority pest would score high in all indicators, but that does not exclude that other pests scoring in some indicators only can be ranked as priority.

Acknowledging the difference nature of impacts on annual and permanent crops and trees is what leads us to consider constructing two rankings based on the type of hosts that each pest affects.

ANNEXES

ANNEX I: DG SANTE Request email to the Member State's representatives to submit comments in writing regarding the methodology proposed to identify priority pests
ANNEX II: Finland Comments
ANNEX III: Denmark Comments
ANNEX IV: United Kingdom Comments
ANNEX V: Sweden Comments
ANNEX VI: Germany Comments
ANNEX VII: Netherlands Comments
ANNEX VIII: Ireland Comments
ANNEX IX: Spain Comments

ANNEX I

From:	DI RUBBO Pasquale (SANTE)
Sent:	17 January 2018 18:00
To:	BOSSCHAERT Johan (SANTE); 'AT - Michael KURZWEIL'; 'BE - Lieven VAN HERZELE'; 'BG - Nikolay ROSNEV'; 'BG - Nikolay ROSNEV'; 'BG - Nikolay ROSNEV'; 'CY - Anthemis MELIFRONIDOU-PANTELIDOU'; 'CY - Anthemis MELIFRONIDOU-PANTELIDOU'; 'CZ - Daniel JURECKA'; 'CZ - Daniel JURECKA CZ (ukzuz@ukzuz.cz)'; 'DE - Karola SCHORN'; 'DE - Karola SCHORN'; 'DK - Jorgen Sogaard Hansen'; 'DK - Jorgen Sogaard Hansen'; 'EE - Raina MÕTTUS'; 'EL- Annoula Mavridou'; 'ES - José Maria COBOS '; 'ES - José Maria COBOS 1'; 'FI - Tiina-Mari MARTIMO'; 'FI - Tiina-Mari MARTIMO'; 'FR - Alain TRIDON'; 'FR - Charlotte TRONTIN'; 'FR - Juliette AURICOSTE '; 'FR - Laurence BOUHOT-DELDUC '; 'HR - Jelena DUGUM'; 'HR - Jelena DUGUM'; 'HU - Gabriel GEZA'; 'HU - Gabriel GEZA'; 'IE - Barry DELANY'; 'IE- Oliver Mcevoy'; 'IT - Alessandro CASANO'; 'IT - Bruno C. Faraglia'; 'IT - Bruno Caio FARAGLIA'; 'IT- Cesaroni Carlo Francesco '; 'LT - Sergejus FEDOTOVAS'; 'LU - Monique FABER'; 'LV - Kristine LIFANOVA'; 'MT - Sharlo CAMILLERI'; 'MT- Raisa Marie Vella Brincat'; 'NL - Wim VAN DER SANDE'; 'PL - Andrzej CHODKOWSKI'; 'PT - Paula CRUZ DE CARVALHO'; 'PT - Paula CRUZ DE CARVALHO'; 'RO - Doina BĂICULESCU'; 'SE - Karin NORDIN'; 'SI - Katarina GROZNIK'; 'SI - Katarina GROZNIK'; 'SK - Katarina BENOVSKA'; 'UK - Nicola SPENCE'; 'UK-FASHAM Helen'
Cc:	VAN GOETHEM Bernard (SANTE); GAVINELLI Andrea (SANTE); GALLHOFF Gudrun (SANTE); DI GIULIO Antonio (SANTE); OWEN-GRIFFITHS Andrew (SANTE); ANDRE Dorothee (SANTE); ARIJS Harry (SANTE); MUNAUT Francoise (SANTE); KARAMITSIOS Yannis (SANTE); RODRIGUEZ CEREZO Emilio (JRC-SEVILLA); SANTE CONSULT-G; SANTE 01 INFO; OJALA Annukka (SANTE); BROUW Adriaan (SANTE); SANCHEZ Berta (JRC-SEVILLA); STANCANELLI Giuseppe (EFSA); REUNIONS COMMISSION / EXPERTS NATIONAUX (EP); 'service.courrier-actesdelegues@consilium.europa.eu'; BARREIRO HURLE Jesus (JRC-SEVILLA); MIRAZCHIYSKA Maria (SANTE); KAPSALIS Apostolos (SANTE); DI RUBBO Pasquale (SANTE)
Subject:	RE: Follow-up Expert Group on Plant Health Legislation, Discussion of the Delegated Act on priority pests, 16 January 2018
Attachments:	SANTE G1 Intro Priority Pests.pdf; EFSA Support on Priority Pests.pdf; JRC Support on Priority Pests.pdf

Dear Madam, Sir,

Following the **Expert Group meeting on Plant Health Legislation, Discussion of the Delegated Act on Priority Pests** of yesterday, 16 January 2018, please find attached the slides as presented:

1. SANTE introduction on priority pests;

2. EFSA support on priority pests;

3. JRC support on priority pests and details of the draft methodology for the identification of Union Quarantine Pests, qualifying as potential *Priority Pests*.

As discussed during the course of the meeting, comments and remarks on the draft methodology as presented by JRC and EFSA are welcome by 16 February 2018 at the following e-mail address SANTE-G1-PLANT-HEALTH@ec.europa.eu

Lastly, as agreed, a separate email on data request will follow shortly.

Best regards,

Pasquale DI RUBBO

Plant Health Officer

European Commission I Commission européenne
DG Food Safety and Health (DG SANTE)
Unit G1 – Plant Health

Rue Froissart 101
B-1049 Brussels/Belgium
Office: 101 6/066
(+32) 2 292 04 83
Pasquale.DI-RUBBO@ec.europa.eu

Find us on the web: http://ec.europa.eu/food/plant/index_en.htm

----
The views expressed in this e-mail are my own and may not,
under any circumstances, be interpreted as stating an official
position of the European Commission.

From: BOSSCHAERT Johan (SANTE)
Sent: Thursday, January 11, 2018 1:55 PM
To: 'AT - Michael KURZWEIL'; 'BE - Lieven VAN HERZELE'; 'BG - Nikolay ROSNEV'; 'BG - Nikolay ROSNEV';
'BG - Nikolay ROSNEV'; 'CY - Anthemis MELIFRONIDOU-PANTELIDOU'; 'CY - Anthemis MELIFRONIDOU-
PANTELIDOU'; 'CZ - Daniel JURECKA'; 'CZ - Daniel JURECKA CZ (ukzuz@ukzuz.cz)'; 'DE - Karola SCHORN';
'DE - Karola SCHORN'; 'DK - Jorgen Sogaard Hansen'; 'DK - Jorgen Sogaard Hansen'; 'EE - Raina MÕTTUS';
'EL- Annoula Mavridou'; 'ES - José Maria COBOS '; 'ES - José Maria COBOS 1'; 'FI - Tiina-Mari MARTIMO'; 'FI -
Tiina-Mari MARTIMO'; 'FR - Alain TRIDON'; 'FR - Charlotte TRONTIN'; 'FR - Juliette AURICOSTE '; 'FR -
Laurence BOUHOT-DELDUC '; 'HR - Jelena DUGUM'; 'HR - Jelena DUGUM'; 'HU - Gabriel GEZA'; 'HU - Gabriel
GEZA'; 'IE - Barry DELANY'; 'IE- Oliver Mcevoy'; 'IT - Alessandro CASANO'; 'IT - Bruno C. Faraglia'; 'IT -
Bruno Caio FARAGLIA'; 'IT- Cesaroni Carlo Francesco '; 'LT - Sergejus FEDOTOVAS'; 'LU - Monique FABER';
'LV - Kristine LIFANOVA'; 'MT - Sharlo CAMILLERI'; 'MT- Raisa Marie Vella Brincat'; 'NL - Wim VAN DER
SANDE'; 'PL - Andrzej CHODKOWSKI'; 'PT - Paula CRUZ DE CARVALHO'; 'PT - Paula CRUZ DE CARVALHO';
'RO - Doina BĂICULESCU'; 'SE - Karin NORDIN'; 'SI - Katarina GROZNIK'; 'SI - Katarina GROZNIK'; 'SK -
Katarina BENOVSKA'; 'UK - Nicola SPENCE'; 'UK-FASHAM Helen'
Cc: VAN GOETHEM Bernard (SANTE); GAVINELLI Andrea (SANTE); GALLHOFF Gudrun (SANTE); DI GIULIO
Antonio (SANTE); OWEN-GRIFFITHS Andrew (SANTE); ANDRE Dorothee (SANTE); ARIJS Harry (SANTE);
MUNAUT Francoise (SANTE); DI RUBBO Pasquale (SANTE); KARAMITSIOS Yannis (SANTE); RODRIGUEZ
CEREZO Emilio (JRC-SEVILLA); SANTE CONSULT-G; SANTE 01 INFO; OJALA Annukka (SANTE); BROUW
Adriaan (SANTE); SANCHEZ Berta (JRC-SEVILLA); STANCANELLI Giuseppe (EFSA); REUNIONS COMMISSION
/ EXPERTS NATIONAUX (EP); 'service.courrier-actesdelegues@consilium.europa.eu'
Subject: Expert Group on Plant Health Legislation, Discussion of the Delegated Act on priority pests, 16
January 2018

Dear Sir, Madam,

Please find attached the annotated agenda for a first discussion on a delegated act
on priority pests foreseen under the new Plant Health Regulation.

Best regards.

Johan Bosschaert

European Commission
Directorate-General Health and Food Safety
Directorate Crisis management in food, animals and plants
Plant Health Unit

B-1049 Brussels/Belgium
F101 06/056
+32 2 2962585
johan.bosschaert@ec.europa.eu

Find us on the web: http://ec.europa.eu/food/plant/index_en.htm

ANNEX II

Comments of Finland on the JRC methodology for selecting priority pests

To understand and to be able to comment the methodology profoundly the member states would need the technical report on the methodology. It would be really much appreciated if the technical report would be delivered to member states as soon as possible.

The general aggregation of different types of impacts into IIQP is clear from slide 10. However, the way in which the indicators ($w_{1.1}$-$w_{3.4}$) are calculated is not explained, and therefore commenting this part of the methodology is not possible.

The weighting of different factors largely determines the outcome of the prioritization. Therefore, special attention should be paid to the elicitation of the weights from the legislators. In the presentation, no details about the elicitation are given, and therefore it is not possible to comment that part of the process.

I.4 Difficulty of eradication (slide 17)
It appears that in the model the relationship between the difficulty of eradication and priority is positive and linear (= the more difficult the eradication, the higher the priority). However, if the pest is very hard (=practically impossible) to eradicate, the measures that are taken to manage the risk of the priority pests (i.e. information to the public, surveys, contingency plans, simulation exercises, and action plans for eradication) are very unlikely to be successful. Consequently, targeting such measures to such pests would be a waste of resource. Instead of a simple positive relationship, a threshold could also be defined, above which pests do not qualify as priority pests, since "the priority pest measures" are very unlikely to be effective against them.

On the other hand, difficulty of eradication as such is not mentioned in the Plant Health Law as a criterion for priority pests. Therefore, it is not clear why it has been selected to be an indicator. If the intention is to use the difficulty of eradication as an indicator of control costs, it seems to be overlapping with the point 1.3 additional producer costs (slide 18).

If the host is perennial vs. annual affects the cost of eradication but it does not (always) affect the difficulty of eradication, since perennial herbaceous plants may be as easy to destruct and replace as annual herbs. If the idea is to account also for the cost of eradication, the average time after which the plants are normally replaced with new ones, could be used as an indicator. Alternatively, woody vs. herbaceous might also be an indicator for the difficulty of eradication measures.

These could be added to parameters used to assess the difficulty / cost of eradication:
* The ability of the pest to survive without a host plant for long periods (e.g. over at least one growing season)
* Production in greenhouse vs. outdoors, or the proportion of greenhouse production

1.2 Price and market Impacts, 1.3 Trade impacts (slides 20, 22, 23 & 25)
If "quantity of imports" and "quantity of exports" refer to actual imports and exports (and not to trade between EU member states) a large part of trade, which is essential to the economies of many member states, is excluded. If trade from an infested member states to other member states can be restricted due to presence of quarantine pests, also EU-trade should be taken into account in the indicators.

Economic impact on street trees
It seems that impacts on park and street trees are taken into account only in social (slide 39: I.17 Degree of diversification, not clearly stated though) and environmental (slide 42: I.19 Damage / mortality of street plants) impacts, although the economic value of such trees can be substantial. Ideally, the economic impacts on park and street trees should be assessed so that they can be compared to that of crop and forestry plants (in slide 14: I.1 Maximum production loss).

3.1 Impact on street trees, 3.2 Impact on spread pests, 3.3 Impacts control measures (slides 42, 43 & 44)
The variables are said to be dichotomous, but the outcomes seem to have more than two levels (since it is written "Higher the.., higher the environmental impact and higher the priority"). Maybe the number of affected ornamental species, and boosted pests and diseases are taken into account (although that is not evident from the slides).

I.19 Damage / mortality of street plants (slide 42)
The use of dichotomous scale should be reconsidered, because the impacts to street trees vary from minor (e.g. discoloration of leaves) to major (e.g. quick death of the trees), which should be reflected in the outcome of the assessment.

I.20 Capacity to boost other pests
Capacity to boost other pests is rarely an environmental impact. Instead, the impact types (economic, social or environmental) of boosting other pests depends on the pest species that are boosted.

I.23 Damage/mortality of native plants (slide 46)
The use of a dichotomous scale should be reconsidered, since the damage can range from minor (e.g. discoloration of leaves) to major (e.g. quick death of plants from large areas), which should be reflected in the outcome of the assessment.

The importance of the affected plant for the affected ecosystem should be taken into account in the indicator. That way the indicator could differentiate pests that would affect only one plant species from pests that could affect the whole ecosystem.

I.24 Losses of biodiversity & wildlife (slide 47)
Using the "number of protected animal and plant species associated with the habitat that can be affected" as an indicator, without assessing whether those protected species could actually be affected may corrupt the assessment. (This is because e.g., a pest of heather would not threaten all protected species that are associated with the habitat types where heather is growing.)

Defining which species are protected is not simple, since different species are protected in different countries. Consequently, only the geographical areas in which the pest could establish should be taken into account in such an indicator.

ANNEX III

Comments from Denmark

Comments and questions on the draft methodology as presented by JRC and EFSA

Denmark is overall positive towards the draft methodology presented by JRC and EFSA at the expert group meeting on Priority pests. The selection of criteria under each of the three indicators consider many relevant issues and seem to be very thorough. However to fully understand and thus give detailed comments to the method, more information is needed, e.g. the full technical report.

Denmark has the following comments and questions to the draft methodology:

- It is unclear how the weighting of the indicators and the weighting of criteria within one indicator is managed. Will W_1, W_2 and W_3 always weigh 1/3 each or will this differ according to the pest in question? Will JRC manage all weights or will Member States as legislator have a say in certain cases? If yes, in which cases and when, should Member States comment on this? Denmark wishes a draft layout of the proposed weighting by JRC, before input is given to this.
- Denmark is worried, that the same issue can be weigted under more than one indicator, and thus be given a higher impact than wanted. E,g. production impact and employment impact will in some cases be mutually dependent, and thus get a 'double' score, even though they handle the same issue. It is unclear what the consequences will be if such a "double scoring" occurs and whether it may be undesirable.
- Denmark is worried that the methodology will not,take into account the differences between Member States and we wish further elaboration from JRC on how this is taken into account.
- Denmark is happy to see, that pathways of pests into the EU is NOT part of the chosen criteria, since the overarching principles is the worst case scenario i.e. maximum spread scenario for all pests
- It is not clear from the presentation, whether or not the chosen criteria under 'Economic impact' take the trade within the EU into account or only consideres export and import with third countries?

- Regarding the social impact indiactor, how are the different natural habitats rated within the EU? E.g. is it taken into account, that a beech forest in Denmark might have a different value that a beech forest in Italy?
- Is caloric, protein and fat supply the best way to measure impact on food security and food safety? In an EU setting, this is not problems citizens of the EU encounters.
- Note that when it comes to the use of pesticides, Member States have varying rules and access to such. Denmark therefore wants to caution how impact of control measures, when it comes to pesticides, is rated.

Comments on suggestion from JRC and EFSA on differentiated approach to pests related to crops versus forestry hosts

Denmark supports the suggestion to operate with two lists for the priority pests, one for crops and one for forestry.

National pest prioritisation data from Denmark

To support the work of JRC and EFSA please find, as attachment to this letter, two reports by Aarhus University regarding a methodology to quarantine pest prioritisation in a Danish setting:

- Prioritising the quarantine pests listed on the EU Plant Health Directive DIR 2000/29 Appendices I & II, and the EPPO Alert list

- Prioritising the quarantine pests listed on the EU Plant Health Directive DIR 2000/29 Appendices I & II, and the EPPO Alert list – considering threat to only glasshouse-grown crops in Denmark

If Denmark can be of further assistance regarding data retrival, please do not hesitate to contact The Danish Agricultural Agency.

Yours sincerely,

Sara Melhedegård Mørch (LFBT)
+45 45263826
SAMEMO@lbst.dk

ANNEX IV

Comments of UK on the JRC methodology for selecting priority pests

Dear Colleagues,

Firstly the UK would like to thank the Commission, the JRC and EFSA for their presentations.

The Commission presentation was straightforward, and useful to see what is being done and by whom.

EFSA – there wasn't a lot of detail about how the assessments are going to be carried out, but the approach to gathering the data on the pests made sense. There are some concerns that the level of data it is possible to obtain for each pest is unlikely to be uniform – certain data may simply not exist, and this may hold back some assessments.

JRC – The slides stress that a major part of the approach is homogenous analysis, and equal attention to all pests. Again there is a concern that there may be little data on some pests – and a lot of time may be spent trying to make the data collection uniform. It might be better to put resources into finding data and evaluating pests where there is more disagreement / uncertainty.

Mention was made during the meeting of weighting behind different indicators and requests were made for more information on this. At the moment it's not clear how the different sub-categories combine to produce the "W" sub-indicators e.g. I.7, I.8, I.9, I.10, how do these combine to make W1.3? Absence of this kind of detail makes the overall approach difficult to comment on and we welcome the opportunity to view the full report which was mentioned during the meeting.

A comment is also made about slide 11 in particular – it does look as though a pest with a high economic impact, but lower social and environmental impact could be considered not a priority. If this is not the case, the numbers and boundary between priority and non-priority need some further explanation.

On the indicators: No additional indicators are suggested, but comments on those proposed are given below.

- Economic impacts:
- For many of the area planted/import/export indicators: What time period is being used?
- Will it be the same for all crops and all pests? Individual commodities can vary a lot from year to year, often in response to one another (global prices fall, imports go up, the next year's EU crop area goes down for annual crops – or the trees aren't felled for another year or two for forestry). So the time period needs to be long enough to even out annual fluctuations. This will also be the case with producer costs, there can be great variation, and different chemicals may be used in different parts of the world
- However, the time period also needs to be short enough to take into account long-term trends in crops as planting material changes over time.
- For quantity of exports (I7 & I8), is the possibility of re-export recognised? This might also affect import data unless net import data were calculated.
- Social impacts. This is the overall category about which we had most uncertainty
- Food security/safety impacts:
- Crops vary according to variety, suitability of habitat, etc. e.g. most maize in the UK is fodder crop as sweetcorn varieties grow less well here. If using FAO statistics for calorific value etc., which are likely to vary according to the exact growing conditions and cultivar, is it possible to correct for European data?
- Biofuels may skew the figures?
- The food measures are not applicable to forestry/tree species (unless fruit/nut crops)
- I.17 on degree of diversification does not, appear to be a discriminating indicator. The text ends "… by region – common to all crops". It may just be the wording and our misinterpretation, but if it is genuinely the same irrespective of hosts, why include it?
- Unesco and Commodities with protected designated origin may be quantifiable, but it is unclear how useful they will be in practice

- We are not sure the current indicators fully account for recreational use of the landscape
- One idea: something like the number of tourists per country/NUTS2 combined with the forest area by country/NUTS2 (depending on data). We know that trees are an important part of peoples' landscape, and while "tourists" will be an over-count by including sun- or museum- type visitors (and quite possibly exclude visitors who don't leave their home nation), it is at least something which could be measured.
- Environmental impacts:
- Street trees could be classified in social impacts as well as/instead of environmental impacts – I think this may have been commented on at the meeting
- Are there any examples of pests with the capacity to boost the spread of other pests – Assume this means they are vectors of other things, but is the risk then the pest, or the pest it is vectoring?
- For I.23 – damage/mortality of native plants: a dichotomous variable feels too blunt. To the question "does the pest negatively affect species of native plants", in all honesty the answer is often "Potentially". In this instance, it feels too blunt to force a Y/N answer, and an intermediate option may help guard against an answer with an inappropriate certainty, e.g. the pest feeds on a range of Asian species of *Fraxinus*; maybe it feeds on *F. excelsior* too, but no data are available. Is the answer yes (it feeds on the genus) or no (no documented feeding on the European species has been found)?
- Number of protected animal and plant species associated with the habitat that can be affected. This is likely to be quite crude, and more detail may be needed. Obviously would favour trees compared to crops, but some crop pests can have wider implications, and this may be harder to take into account.

Overall, the aims of having more and better data on impacts are an ideal. In many cases the ideal data does not exist, and this will make the assessment difficult to apply in a homogenous manner.

Best wishes

Fiona on behalf of Helen Anderson

Fiona Hopkins
Plant Health Policy | Plant and Animal Health |
Department for Environment, Food and Rural Affairs

Direct: 0044 (0) 2080 265 786 | Mobile: 0044 (0) 7500 88 2841 | Email: fiona.hopkins@defra.gsi.gov.uk |
Address: Defra, Zone H, Eastbrook, Shaftesbury Road, Cambridge, CB2 8DR

2018-02-16

Jordbruks
verket

Swedish Board of Agriculture
Kristof Capieau
Tfn: 036-156008
E-post: Kristof.Capieau@jordbruksverket.se

EU Commission
Att: Pasquale DI RUBBO

SANTE-G1-PLANT-HEALTH@ec.europa.eu

Comments and remarks on the draft methodology as presented by JRC and EFSA with regard to priority pests

Dear Pasquale Di Rubbo,

Please find below comments based on input we received from the unit for risk assessment of plant pests at the Swedish University of Agricultural Sciences.

GENERAL COMMENTS

o Generally it is not possible based on the information available in the powerpoint presentation by JRC to understand in any detail what the indicators will include and how the indicators will be measured. This is a major obstacle for evaluating the model. However, it is possible to comment on the overall approach as well as seemingly missing elements.

o It is sometimes difficult to judge which of the criteria in Annex 1, section 1 and 2 of the Plant Health Regulation (PHR) that are the base for some of the indicators presented in the model. It is stated in the presentation that each criterion should be linked to the associated indicators by a code (slide 9). This is an excellent idea but the codes are not used in the presentation.

o Some of the indicators appear to have changed focus compared to the criteria given in the PHR. For example in the criteria b (iii) only the impact on tree species are included whereas in the model also impact on other hosts is included in the corresponding indicator (Cultural heritage importance). This means that also pests affecting non-tree hosts will score in this indicator. This change in focus may result in that pests of trees will receive a relatively lower ranking than they would otherwise obtain. But how significant this effect will be in the end will also depend on how the indicators are combined in the model. Possibly there are other criteria that has been included resulting in the broader description of the indictor in the model. This is however difficult to evaluate based on the available powerpoint presentation.

o Limited data for some of the parameters that will be assessed will cause high uncertainties. However, since different pests differ significantly in the type of impact they cause the effect of the weighting of parameters and precisely how the parameters are defined will probably have a much larger impact on the final ranking than the uncertainty associated with the lack of data.

o   As regards the question of how uncertainty is included in the model, it is stated that "Uncertainty incorporated via sensitivity analysis – Impact on pest selection of weights and data quality" (slide 8). It seems like the program @RISK will be used to calculate the uncertainty distribution based on the available data and expert elicitations (EFSA presentation, slide 14). Exactly how the uncertainty distributions of each parameter will be combined in JRCs model is however not clear.

o   As regards the weighting of the indicators and the different components of the model, it is stated that the weights for the indicators relating to the sub-category "Production impacts" will be set by legislator(s). This is the first category described in the presentation and we assume that this also applies to the other subcategories although it is not stated. Further, the impact of weighting options on the pest listing (selection for priority) will be analyzed using a sensitivity analysis. Presumably the main purpose of the model is to provide a tool that allows legislators to weight the different categories of potential impacts according to how important they think the different aspects are. In other words, the model should be transparent enough to help legislators to weight the different types of impacts against each other.

APPLYING THE MODEL SEPERATELY ON ´PESTS OF CROPS´ AND ´FORESTRY PESTS´?

o   It seems appropriate in a first step to separate pests of crops and pests of trees. Some of the parameters that are included in the model will not be relevant for pests on crops, e.g. effects on ornamental and street plants, and some are not applicable for forest pests, e.g. food security impact.

o   In addition, we suggest that the term *forestry pests* is replaced by *pests of trees species* to also include tree species not specifically used in forestry.

ADDITIVE MODEL *VERSUS* OTHER APPROACH?

The requirement in article 6.1 b) in PHR is formulated as follows "their potential economic, environmental **OR** social impact is the most severe…" whereas the description of the JRC model indicate that the values from the three main categories will be summed to obtain the overall score. The text formulation in PHR could be understood that if a pest has a most severe impact in one of the main categories (non-additive model approach), then the pest would qualify directly as a priority pest.

•   For most pests we consider that the additive method would be the best approach (but see exceptions below). The disadvantage with the alternative approach where the pests are rated based solely on the main category within which they have their strongest impact is that e.g. a pest with a very high economic impact and no social and environmental impact would be ranked higher than a pest with only slightly lower economic impact and high impact within the other categories (Fig. 1).
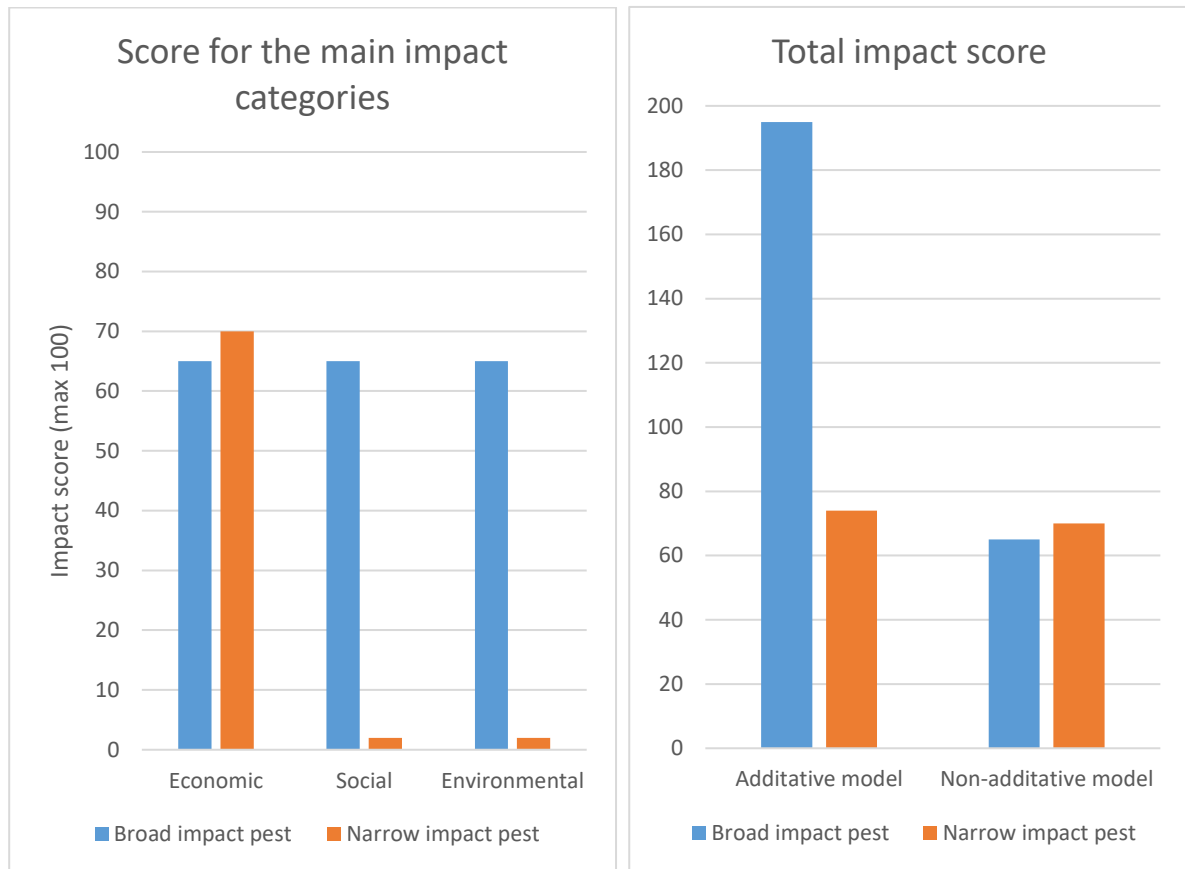
Fig. 1 Hypothetical example of a broad vs. a narrow impact pest and the resulting total impact score using an additative and a non-additative approach.

- If the interpretation of the formulation in article 6.1 b) is that it is enough if a pest has the most severe impact in one main category then the additive method may exclude pests that according to the PHR should be included. One approach to make sure that a pest with a maximum impact score in one of the three main categories (i.e. economic, social or environmental impact), ends up as a priority pest is to include a threshold value within each main category for which pests that receives a higher score directly qualifies as a priority pest.

- The procedure to use an additive method to calculate the overall impact score is not restricted to the three main categories but also applies to the calculations of and between the subcategories. Since the estimations of the different types of impact to a high degree is based either on yes or no questions or on counting, e.g. the number of affected animal and plant species, the model will likely benefit pests with a broad rather than a narrow but high impact. **The key concern is that it appears highly unlikely that a pest with an extreme impact within one or a few of these subcategories where the significance of the impact is not assessed quantitatively will end up on the list of priority pests** (Fig. 2). For example, a pest that, if established in EU, would be likely to cause extinction of a high number of native species without economic or social importance

would not end up on the list of prioritized pests. To be able to implement such a procedure it would be valuable to evaluate how the model scores a species with a very narrow impact, e.g. *Agrilus planipennis* affecting ash trees.
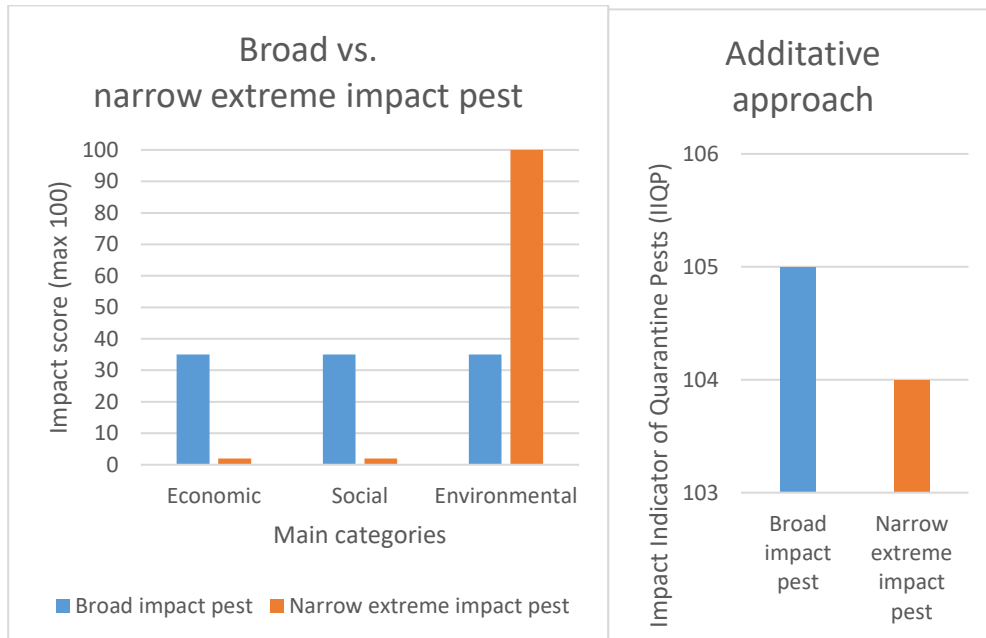

Fig. 2 Hypothetical example of a broad vs. a narrow extreme impact pest and the resulting total impact score using an additative approach.

ARE CRITERIA FROM PHR TRANSFERRED APPROPRIATELY INTO THE INDICATORS IN THE PROPOSED MODEL?

With regard to the indicators for:

- **Economic impact**

  The following criteria listed in Annex 1 section 1 point 4 does not seem to be included anywhere in the JRC model:

  - **"(c) costs of replanting and/or losses due to the necessity of growing substitute plants;"**
    This cost does not appear to be directly included in any of the indictors, but it may possibly be included in the indicator "additional producer cost". Replanting of street trees is for example associated with considerable costs. Thus, if this criterion is not considered, the impact of pests that mainly cause damage on tree species commonly used as street trees may be underestimated.

  - **"(f) effects on native plants, biodiversity and ecosystem services;".**

The impact on native plants is included in the indicator 'Damage/mortality of native plants'. But only *protected animals* (and plant species) are included in the indicator 'Losses of biodiversity and wildlife'. Thus, negative impact on native animals, that are not "protected", as well as other organism groups (e.g. fungi) are not included. These organisms should be included since they are a vital part of the biodiversity. Moreover, the impact on ecosystem services is limited to effects on "water erosion" and "soil carbon stocks" which is related to the following point;

- **"(o) changes in ecological processes and the structure, stability or processes of an ecosystem, including further effects on plant species, erosion, water table change, fire hazards, nutrients cycling;".**
  In the proposed indicators the following factors from the criteria are missing; water table changes, fire hazards and nutrient cycling. Moreover, it is unclear why the indicator "soils carbon stocks" has been limited to only soil and why aboveground biomass has been omitted.

- **"(p) costs of environmental restoration and prevention measures;"**
  This could possibly be included as part of the indicator 'Public expenditure' but it is not clear from the available presentation if this will be done and if so how.
- **"(s) effects on water quality, recreation, tourism, landscape heritage, animal grazing, hunting, fishing.".**
  Water quality does not appear to be included in any indicator.

- **Social impact**
  - The indicator 'employment loss' is stated to be limited to employment related to different production systems and do not appear to also include "…industries related to those sectors, including tourism and recreation;" as stated in the criteria in Annex 1 section 2 point b (i). This indicator seems not to cover sufficiently the citrerion in PHR, as effects on tourism and recreation (e.g. in forest) are important effects.

  - The criteria in Annex 1 section 2 point b (iii) refers to "the disappearance of, or long-term large-scale damage to, important tree species growing or cultivated in the Union territory or tree species of high importance in terms of landscape as well as cultural or historical heritage for the Union.". The requirement of "long-term large-scale damage" is not included in the description of the corresponding indicator in the model, i.e. "Cultural heritage importance".

- **Environmental impact**
  - The criteria in Annex 1 section 2 point c (i) refers to "significant effects on biodiversity…". This is not in correspondence with the model where a dichotomous variable is used to answer if "…the pest can negatively affect species of native plants.". Preferably this variable should be exchanged to a quantitative assessment or

at least the question should be reformulated to "the pest can *significantly* affect species of native plants." in the indicator "Damage/mortality of native plants".

SPECIFIC COMMENTS ON INDICATORS

o **Indicator 1.4 (Difficulty of eradication)**
It is stated that this is still under development, but it is currently explained as a classification based on "polyphagous pest vs monophagous; perennial vs annual hosts; presence of asymptomatic infections vs not presence; natural spread rate". It would be interesting to obtain more information about this indicator as to what criteria it refers to, e.g. criteria (h), and whether this will be a dichotomous variable or whether the costs involved will be quantified.

We regard this indicator 1.4 as important and possibly deserves more focus by lifting up the indicator in the model hierarchy? We believe this indicator also might be of relevance for other subcategories within economic impact, as well as for social and environmental impact.

o **Indicator 1.1 (Maximum production loss)**
It is unclear how the maximum production loss is calculated for perennial crops such as forest trees or fruit trees. Probably this has not been decided yet since in the presentation by EFSA they list "Pest impact on annual vs. perennial crops e.g. trees" under the heading "Some of the challenges" (EFSA 2018). Anyway, this may not be a significant problem if agricultural crops and forest pests are analyzed separately.
An alternative unit to *planted area* to use for forests is to instead estimate standing biomass.

o **Indicator 1.2 (Share of MS affected)**
It is unclear why "Share of MS affected" have been included as a separate indicator in the model. From slide 15 it is clear that it will be measured as the number of NUTS2-regions which are climatically suitable for the pest (we assume that only NUTS2-regions that also overlap with the host plants distribution are included). Thus, it will not be a measure of the proportion of the actual land area of a MS that will be affected (Fig.).

To some degree a measure of proportion of NUTS2-regions correspond to the share of people within a MS that lives within the regions which are climatically suitable for the pest. Measures where the number of people "exposed" to a pest in the area where they live have previously been used to evaluate for example the social impact of losses of street trees. But here it is used as one parameter to calculate the production impacts of a pest. The approach used in the model is to use NUTS2-regions as the assessment unit for measuring the "Share of MS affected" area but the actually share of land area in ha for example seems to be a better measure. Anyhow, an explanation of why this factor has been included is necessary.
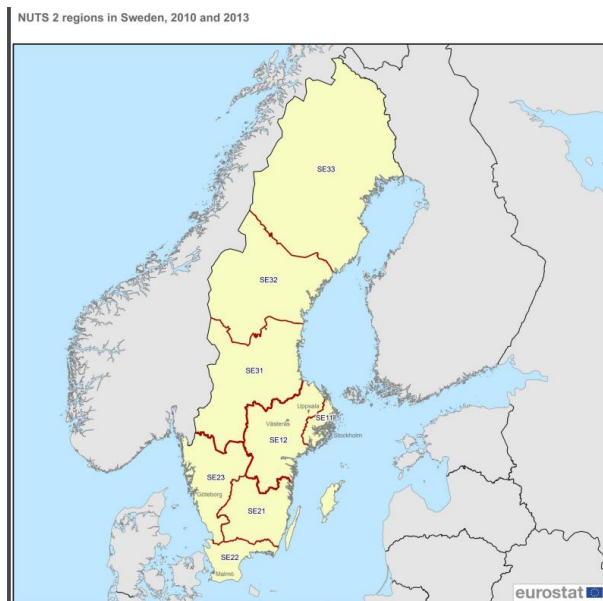
Fig. *NUTS2-regions in Sweden (from Eurostat:*
http://ec.europa.eu/eurostat/documents/345175/7451602/nuts-map-SE.pdf).

o **Indicator 1.9 (Export network)**
It is unclear why it matters how many countries EU export a specific commodity to. It would make much more sense to quantify the total export value and disregard the number of countries that is receiving the commodity.

o **Indicator 1.12 (Upstream and downstream effect)**
It is not clear from the presentation what this refers to and it is not clear which criteria in the new PHR that this corresponds to. Regardless, it seems like an extremely vague measurement to use *number of sectors* and it would be better to try to quantify the total indirect economic impact in monetary terms.

o **Indicator 1.13 (Employment loss)**
The proposed model for calculating employment loss implies that MS with a higher degree of mechanization in their production systems will in general have a lower estimated social impact for this indicator compared to MS with a low degree of mechanization (per unit produced). The value of the indicator will largely depend on how the value of the "labour needs for production (AWU/ha)" is calculated. Will it be calculated at the level of NUTS-2 regions or will it be based on the average value at the EU level?

o **Indicators 1.14, 1.15 and 1.16 (caloric, protein and fat supply)**
We are wondering about the significance of these indictors in the model. Our interpretation is that these indicators will be estimated as the proportion of the total consumption of calories, protein and fat that is potentially lost due to a pest. The indicators appear to be largely derived from standard food security indicators found for example at FAO (http://www.fao.org/faostat/en/#data/FS).

- o **Indicator 1.17 (Degree of diversification)**
  Presumably this indicator corresponds to criteria (s) in Annex 1 section 1 point 4 "effects on water quality, recreation, tourism, landscape heritage, animal grazing, hunting, fishing." But, it is unclear what is actually meant by the description of the data from Eurostat that will be used. In addition, the explanation that the indictor is 'common to all crops' is very confusing.

- o **Indicator 1.20 (Capacity to boost other pests)**
  The "capacity to boost other pests" probably refer to the following criteria in the PHR: "(g) effects on the establishment, spread and impact of other pests, for example due to the capacity of the pest concerned to act as a vector for other pests;" (Annex 1 section 1 point 4). However, most pests benefit other pests since attacked hosts tend to become more susceptible to secondary attacks, e.g. plants with fungal infections frequently becomes more vulnerable to insect infestations. Preferably a ranking scale should be used, e.g. low, medium and high, to avoid that the answer will become "yes" for almost all pests. At least the indicator should be rephrased to "…significantly boost…".

**Institut für nationale und internationale
Angelegenheiten der Pflanzengesundheit**

Institute for National and International Plant Health

JKI, Messeweg 11/12, 38104 Braunschweig, Germany

European Commission
DG SANTE G.1, Plant Health
          (SANTE-G1-PLANT-HEALTH@ec.europa.eu)
Rue Belliard 232
1049 Brüssel, Belgien

per E-Mail

www.julius-kuehn.de	
Bearbeiter/-in:	Dr. Magdalene Pietsch (Pe/Sc/Tz)
Fon:	+49 (0)531 299 3376
Fax:	+49 (0)531 299 3007
E-Mail:	ag@julius-kuehn.de
Ihr AZ:	
Unser AZ:	AG 2641_1-032
Datum:	16-02-2018

Plant Health;
Follow-up Expert Group on Plant Health Legislation, Discussion of the Delegated Act
on priority pests, 16 January 2018

Member States were requested to provide comments and remarks on the draft methodology to identify priority pests as presented by JRC and EFSA on 16 January 2018. Please find in the following initial German comments to the presentation of JRC:

In general we find that JRC and EFSA have developed a promising science based methodology to identify priority pests in a standardized way. However, there are few points and questions to raise:

Choice of pilot pests: The current pilot pests are supported but they are linked in two cases to woody plants and all of them are not present in the EU. We suspect that the methodology would provide other findings, when herbaceous plants or pests present or partly present in the EU would be assessed. Therefore we suggest to include in addition *Tomato ringspot virus* because Pelargonium is a host of major economic importance, a representative of an herbaceous plant and of ornamentals produced under protection (at least in northern parts of the EU). An alternative could be also *Clavibacter michiganensis* subsp. *sepedonicus* or *Synchytrium endobioticum* as representatives for the special situation with partly present potato pests, which are of major importance in the EU.

Calculation of Impact Indicator of Quarantine Pests (IIQP): The IIQP is an interesting approach to identify priority pests, but data availability, weightings and relevance of indicators for single pest/host combinations are major challenging elements. Therefore we think it is necessary to include expert judgement to the calculation of the IIQP.

1. **Economic impact**

    1.1 **Production impacts**

    I.1 Maximum production loss: Producer prices are different in the Member States. This should be reflected in the data. Furthermore: There are hardly no reliable data of production losses. Any estimation is associated with (in some cases high) uncertainties (see below).

I.2 Share of MS affected: NUTS 2 regions are very different in size. Will EFSA deliver the number of regions or the sum of area (ha)? The sum of the area would be preferred.

I.3 Additional producer cost: Especially in case of pests not present in the EU an estimation of the number of additional treatments and practices is not known and estimations are associated with high uncertainties (see below).

Last slide of production impacts: The use of weights set by Legislator(s) is mentioned. It is proposed to involve the Member States in the setting of weights.

1.4 Impacts in other agents

I.11 Public expenditure: Expenditure for research and control programs is difficult to estimate and associated with high uncertainties (see below).

I.12 Upstream and downstream effect: It is unclear what is covered by this indicator.

2. **Social impact/ 2.3 Recreation, landscape etc./I.17 Degree of diversification**: We would need more information about the objective of this aspect and the type of data required to understand this indicator and comment on it.

General remarks to indicators associated with (high) uncertainty: For uncertain indicators it should be examined whether they are clearly useful for the outcome. Indicators based on more or less uncertain estimates do not only affect the assessment of the respective pest. They are even more of importance when they are included in the IIQP, ranked and compared as shown in slide 11 to distinguish between priority and non-priority. Therefore we think it is necessary to analyze also the uncertainty for every IIQP and to make it transparent for the final ranking.

Differentiated approach to pests related to crops versus forestry hosts: The comparison of all priority pest candidates by their IIQP is a major advantage of the presented single approach. With different approaches it will be difficult to establish a ranking over all pests. Therefore we propose to gain more experiences with the different approaches during Task 2 and to decide before Task 3 on the definite procedure.

Yours sincerely,

Signed Dr. Ernst Pfeilstetter
(acting head of institute)

ANNEX VII

Netherlands Food and Consumer
Product Safety Authority
*Ministry of Agriculture,
Nature and Food Quality*

> Postbus 43006 3540 AA Utrecht The Netherlands

Mr. Di Rubbio
for the attention of Mr. Di Rubbio
DG SANTE G1
SANTE-G1-PLANT-HEALTH@ec.europa.eu .
Brussels

National Plant Protection Organisation

Catharijnesingel 59
3511 GG Utrecht
Postbus 43006
3540 AA Utrecht
The Netherlands
www.nvwa.nl

Contact
Martijn Schenk

T +31 (0)65 256 5631
F +31 (0)88 223 3334
M. Schenk1@nvwa.nl

Our ref.
TRCNVWA/2018/EWG PP

Date   16 February 2018
Re.   EWG Priority Pests

Dear Mr. Di Rubbio,

In your E-mail of January 17, 2018 you request comments on the draft methodology as presented by JRC and ESA during the Expert Group meeting on the Delegated Act on Priority Pests of January 16, 2018. In this letter, we would like to put forward some comments which mainly focus on the method that is currently being developed by JRC.

The developed method envisages a combination of multiple indicators into a single "Impact indicator (IIQP)". A threshold will be applied to determine whether a pest is identified as a priority pest or not. We would like to emphasize that a threshold should be set in such a way that it results in the identification of a limited set of priority pests which would allow NPPO's, growers, foresters and the general public to focus their efforts on those pest whose potential economic, environmental or social impact is the most severe in respect of the Union territory.

The method will first be tested on three pilot pests, being *Tilletia indica*, *Xanthomonas citri* and *Agrilus anxius*. Its application will then be extended to the 33 pests on the preliminary list. The three pilot organisms cover three different types of hosts and this therefore seems well chosen. All three pilot organisms are however monophagous, and thus far less challenging than polyphagous pests. For polyphagous pest, it will not be possible to analyse an exhaustive list of host plants. We would recommend to either set a limit on the number of hosts or to limit the analysis to hosts whose economic value is above a certain threshold. This requires further discussion in the Expert Group.

During the meeting, JRC explained that the probability of establishment is not directly taken into account in the impact indicators. In addition, capacity for spread plays a limited role in the impact analysis and might only be included in indicator 1.4 (difficulty of eradication). The reasoning behind this choice would be that impact is evaluated in a maximum spread scenario. However, existing initiatives for identification of priority pests (pest ranking projects) tend to take probability of establishment and/or spread into account. These are key factors that also determine the speed at which the maximum impact will be reached. A low spread capacity allows for mitigation measures and development of new measures (E.g. resistant varieties, new plant protection products) and will thus affect the real impact of a pest. Because it is easier to quantify spread capacity than probability of establishment we recommend that spread capacity plays a decisive role in indicator 1.4.

As stated in the presentation, indicators were identified by a systematic review of the regulation in section 2 of Annex I and the criteria under 4(a) in section 1 of Annex I of (EU) 2016/2031. At this stage, we only have access to these criteria and the resulting indicators and limited insight into the translation of the criteria into the indicators. In spite of this limitation, we will try to provide useful feedback on the methodology. As a general remark, the number of indicators is high. One needs to collect reliable and accurate data for each indicator, while having many indicators does not necessarily result in a better overall impact estimate. We suggest a reduction in the number of indicators, for example by reducing the number of indicators which deal with market effects given that such effects are already partly taken into account when establishing yield losses. For specific issues relating to theindicators which are in the currently proposed version of the methodology we would like to refer to the appendix attached to this letter.

Finally, we would like to underline the importance of a balanced final list of priority pests with respect to the various important hosts crops and tree species across the different climate zones in the union territory. Many indicators are balanced towards food production, while specific references in (EU) 2016/2031 on disappearance of important tree species receive less attention than would be expected on the basis of the legislation.

We hope this is a good basis for further discussion in the Expert Group.

W.J.H. van der Sande
Director NPPO

Appendix. Specific comments on the proposed indicators.

Indicator I.1. Maximum production loss. This indicator is based on host plant area, crop yield, yield loss and quality loss and takes into account those NUTS2 regions which are climatically suitable for the pest. We could not deduce from the presentation whether host plant area, crop yield, yield loss and quality loss are variables that are estimated for each NUTS2 region separately or whether these variables are assumed to be constant across all regions in which the pest can establish itself. We would like to underline the importance of having separate estimates for different climatic regions and soil types (e.g. soil texture) where relevant. Yields will very across the EU, while yield losses will decline towards the margins of the distribution area of the pest. Without separate estimates, production losses can be strongly overestimated.

Indicator I.2. Share of MS affected. This indicator is not listed in Annex I and it is unclear why it should be listed separately. This indicator is already taken into account when e.g. calculating the indicator based on production losses. Based on the available information, we do not see a need for the inclusion of this indicator.

Indicator I.3. Additional producer costs. The presentation lists the number of additional treatments and the number of additional practices. This indicator is probably deduced from points (4b) to (4d) in Annex I, being the "costs of control measures", "costs of replanting….", and "effects of existing production practices". First of all, it unclear whether cost of replanting is indeed included in the number of additional practices. Second of all, although the number of additional treatments is somewhat informative, the costs associated with such treatments and with additional measures are a much better indicator and also better in accordance with the text in Annex I.

Indicator I.4. Difficulty of eradication. This label suggests that the highest impact should be attributed to those pests that are difficult to eradicate, thus by default attributing a high priority to those pests that have already established itself in a part of the union territory and can no longer be eradicated. For pests that are already present, costs of containment measures should be taken into account. Such costs can be considerable and should be weighed against the costs of alternative scenarios/measures. Difficulty of containment is perhaps a better label. As indicated above, we feel that capacity of spread is a key factor for identification of priority pests and is indicative for the speed at which the maximum impact will be reached.

Indicator I.6. Trade intensity. Point (4k) of section 1 in Annex I lists that effects on domestic markets should be taken into account. Hence, the percentage of change in prices (indicator I.5) makes sense. We could not deduce why trade intensity should be included as a separate indicator. Perhaps trade intensity will affect domestic prices, but this does not justify the inclusion as a separate indicator. In addition, it is not clear from the presentation whether these effects are measured in the presence or absence of control measures. This requires clarification.

Indicator I.7/I.8/I.9/I.10. At a first glance, there appears to be some redundancy in the number of indicators which deal with the effects on export markets. Export effects have been given much more weight in the indicators developed by JRC than under point (4) of section 1 in Annex I. E.g. why is there a need for separate inclusion of the share of production traded? and why is there a need for separate inclusion of trade concentration? Regarding the export network, the presentation indicates that this is based on the "*number of trading countries importing from EU a specific commodity affected by the pest (based on pest presence and quarantine status)"*. It is not entirely clear was is meant by this label. Is this the number of importing non-EU countries in which a specific pests has the quarantine status? Does this indicator take price elasticity into account and that the effects of bans can be mitigated by shifting towards alternative markets or towards domestic supply and reduced reliance on imports? Does the indicator take into account that relatively straightforward phytosanitary measures (crop inspection, tests) may restore market access (depending on the biology of the pest)? We would like to suggest the combination of the export related indicators into a single well-developed indicator.

Indicator I.11. Public expenditure. This most likely is a combination of point (4b), (4h) and (4l) of section 1 in Annex I. Will it be feasible to quantify this indicator by using data or will it be based on entirely on experts opinion? Public expenditures clearly are important, but does this indicator vary between quarantine pests and significantly alter the ranking/prioritization of the pests? It seems likely that the introduction of any quarantine pest will require allocation of resources to control programs and research. If so, is it useful to include this indicator?

Indicator 1.13. Employment loss. This indicator is composed of the host planted area, production loss, production and labour needs. Do production losses directly translate into employment losses and if so, is it a simple linear relationship? Until a certain threshold, there might even be positive effects of a pest on employment (need for additional measures), but once the threshold is reached at which production of a particular crop is no longer economically viable, effects on employment can be devastating, but not necessarily so when that crop is replaced by an alternative crop with a different labour need. How will these considerations be translated into the indicator?

Indicator I.14/I.15/I.16. Grains, potatoes, fruits and vegetables are important ingredients of the daily menu because they e.g. provide carbohydrates, fatty acids, fibers, iron, proteins and vitamins. By focusing on overall calories, crops like grain and potato will yield high impact scores relative to e.g. apples and peppers. Is that representative for the importance in the daily menu?

Indicator I.17. Degree of diversification. The text in the presentation indicates that this indicator is based on the share of diversification of production by means of other gainful activities (recreation, tourism, landscape, fishing and hunting) by region – common to all crops. This indicator probably links to point (4s) of section 1 in Annex I, but from the provided information we cannot deduce how this indicator (share of diversification) translates into the effects on water quality, recreation, tourism, etc.

Indicator I.18. Cultural heritage importance. This indicator seems somewhat farfetched. Is presence of a particular host in a UNESCO World Heritage site truly the best indicator of social impact? It is also not clear whether the number of UNESCO World Heritage agricultural or natural landscapes refers to the number in the EU or to the number worldwide. Many of these areas are so large that any host will be present to some degree. We would like to point out that the text in Annex I, section (2b) states that social impact includes the effects of "*the disappearance of, or long-term large-scale damage to, important tree species growing or cultivated in the Union territory or tree species of high importance in terms of landscape as well as cultural or historical heritage for the Union".* Thus, the 2016/2031 specifically refers to the impact on tree species. This aspect is not captured correctly in the current indicator, which is much more oriented towards agriculture rather than tree species and landscapes.

Indicator I.20. Capacity to boost other pest. The term boost is less clear than the text in point (4g) of section 1 in Annex I itself, namely "*effects on the establishment, spread and impact of other pests, for example due to the capacity of the pest concerned to act as a vector for other pests*". Why not use the original text in the legislation? In addition, is this an environmental impact indicator or an economic impact indicator?

ANNEX VIII

Horticulture and Plant Health Division
Department of Agriculture, Fisheries and Food
Backweston Campus
Celbridge
Co. Kildare
Ireland

19th February 2018

SANTE G. 1,
Plant Health,
Rue Belliard, 232,
B-1049, Brussels,
Belgium

Subject: Article 6 of EU Regulation 2016/2031 on Protective Measures against Pests of Plants

Dear Sir, Madam

Further to the Commission Working Group meeting on Priority Pests of 16th of January 2018 in Brussels and in particular Article 6 of EU Regulation 2016/2031 and the establishment of a list of priority pests.

Ireland can broadly support the approach being applied by The Joint Research Centre together with the European Food Safety Authority on establishing criteria for selecting Union quarantine pests as priority pests.

The weightings to be assigned to the particular indicators in each of the sub groups of environmental, social and economic impacts will be significant in deciding the final list of priority pests and we look forward to further updates on this process.

Given the impact of *Hymenoscyphus fraxineus* on *Fraxinus* across the EU we welcome the inclusion of *Agrilus planipennis* in the initial list of 33 priority pests. *Fraxinus* remains such a significant landscape, cultural and timber species in the short term and hopefully longer in Ireland with much research underway in relation to *Fraxinus* breeding for resistance to Hymenoscyphus *fraxineus*.

In relation to the selection of *Agrilus anxius* for the pilot pest for forestry we would like to point to *Agrilus planipennis* as a more immediate threat to EU forestry crops. Recent reports suggest that Agrilus *planipennis* is currently spreading from eastern Russia to central Russia and further westward, while *Agrilus anxius* is currently confined to North America. It could be argued that the more imminent threat arises from *Agrilus planipennis* due to its current proximity and land connection (recognizing the threat of introduction through wood product import for both species).

Horticulture and Plant Health Division
Department of Agriculture, Fisheries and Food
Backweston Campus
Celbridge
Co. Kildare
Ireland

In addition to the above points on priority pests for the EU (and others), Ireland has additional concerns which we believe are significant and worth consideration;

- Ireland has Protected Zone status for 6 bark beetles *Dendroctonous micans & Ips species,* 5 of which are present in the EU.
- 50% + of Ireland's forest estate is comprised of the exotic tree species Sitka spruce (*Picea sitchensis*).
- European bark beetle species remain priority pests for Ireland where the potential impact of exotic bark beetles on exotic coniferous tree species is of high concern.

Yours sincerely,

Liam Brennan

_____

Liam Brennan

REINO DE ESPAÑA
MINISTERIO DE AGRICULTURA Y PESCA, ALIMENTACION Y MEDIO AMBIENTE
Dirección General de Sanidad de la Producción Agraria
Subdirección General de Sanidad e Higiene Vegetal y Forestal

KINGDOM OF SPAIN
MINISTRY OF AGRICULTURE AND FISHERIES, FOOD AND ENVIRONMENT
General Directorate of Health in Agronomical Production
Sub-directorate General for Forestry and Plant Health and Hygiene

COMMENTS ON THE METHODOLOGY FOR THE IDENTIFICATION OF THE UNION QUARANTINE PESTS QUALIFYING AS PRIORITY PEST

February 2018

1. Comments on the indicators used to measure the economic impact:

Direct economic impacts – 1.1 Production impacts
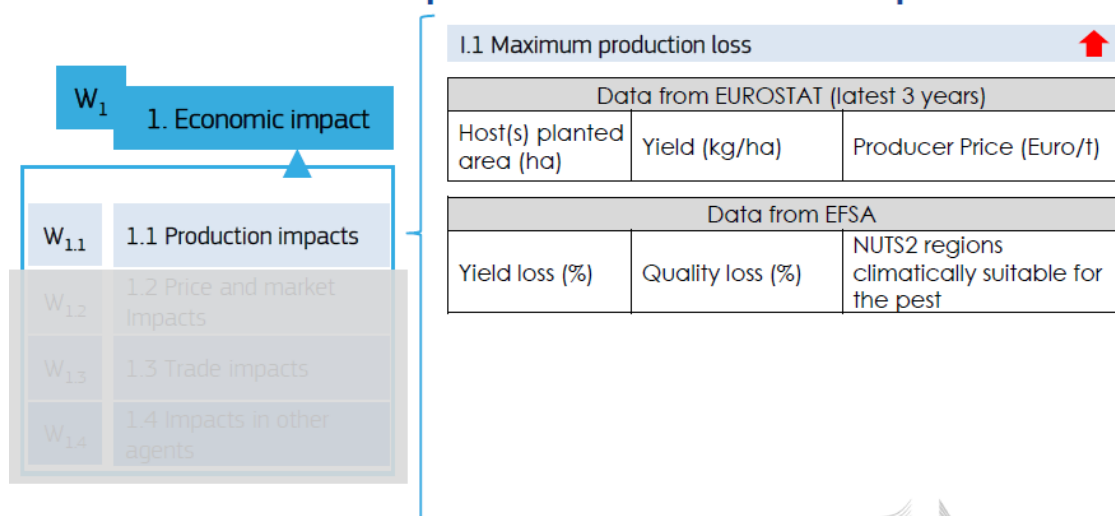
Because the data about yield and quality losses produced by the pest are, in many cases, only available from the origin countries where the pest occurs, it should be clarified the criteria used to estimate these losses in Europe. For instance, a 10% lost in USA are probably more problematic than 10% losses in less developed countries of Africa. It should be also considered these losses related to the profit margin of each crop. In other words, 10% losses may be 100% of profit losses in a certain crop but, only a little amount of the profit in other.

Direct economic impacts – 1.1 Production impacts

W₁ 1. Economic impact

W₁.₁	1.1 Production impacts
W₁.₂	1.2 Price and market Impacts
W₁.₃	1.3 Trade impacts
W₁.₄	1.4 Impacts in other agents

I.1 Maximum production loss

I.2 Share of MS affected

I.3 Additional producer cost

Data from EFSA
Number of additional treatments
Number of additional practices

European Commission

Other indicator to take into account to evaluate the additional producer cost related to the number of additional treatments/practices should be the profit margin of each crop, because crops with higher profit margin can support better the cost of additional treatments than crops with lower gains. For instance, in a crop where 10 treatments are normally needed, an increase of 3 additional treatments due to the presence of the pest that is being assessed represents a 33% increase in number of treatments and costs. Whereas another crop can exist that normally need only 1 treatment but, due to the presence of a different pest, an additional treatment would be required. Consequently in this crop a 100% increase in treatments and costs will be produced. Without considering this additional data, if comparison is made between the two pests, the first one that requires 3 additional treatments seems to have a more priority than the other that only needs an additional one and consequently, in the evaluation process, will receive a higher punctuation. However, the second pest increase in production costs is higher than the first one. Consequently, without using this additional parameter, part of essential information to compare between pests may be missing and some pest could be underestimated.
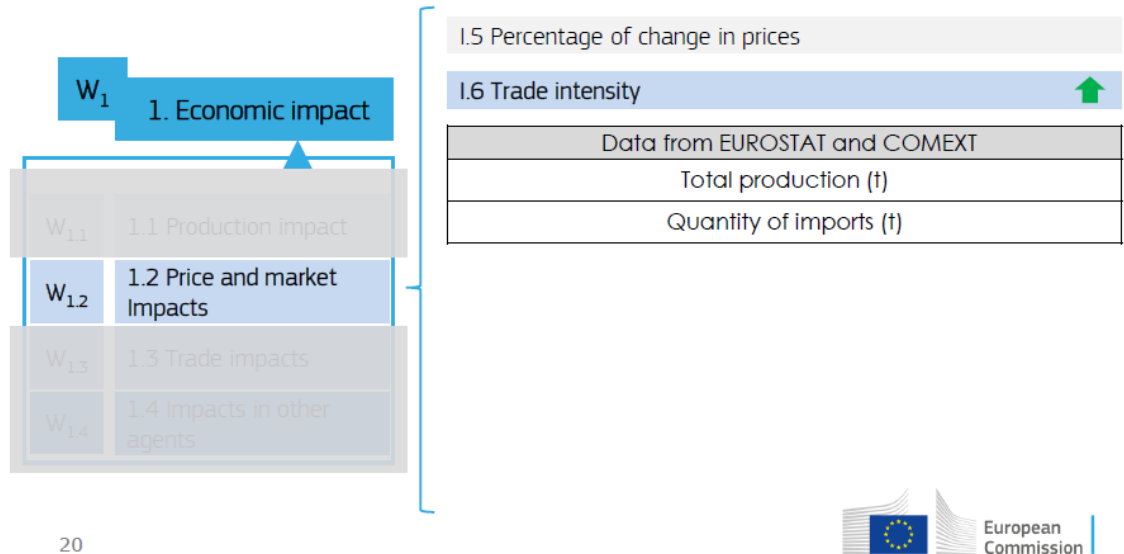
Direct economic impacts – 1.1 Production impacts
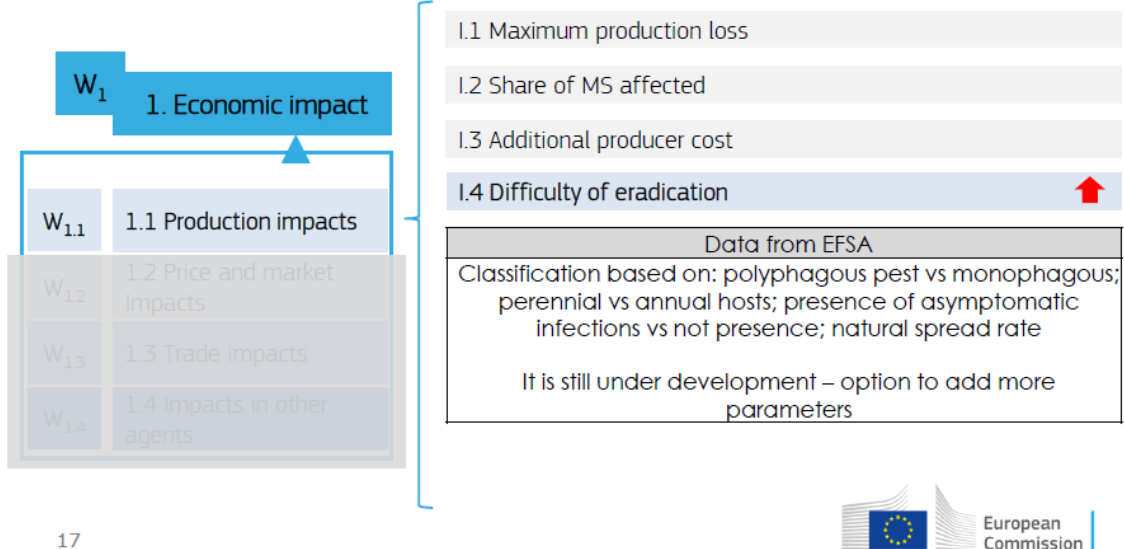
1. Economic impact

W₁.₁	1.1 Production impacts
W₁.₂	1.2 Price and market impacts
W₁.₃	1.3 Trade impacts
W₁.₄	1.4 Impacts in other agents

I.1 Maximum production loss

I.2 Share of MS affected

I.3 Additional producer cost

I.4 Difficulty of eradication

Data from EFSA
Classification based on: polyphagous pest vs monophagous; perennial vs annual hosts; presence of asymptomatic infections vs not presence; natural spread rate
It is still under development – option to add more parameters

European Commission

When evaluating the difficulty of eradication it should be also considered the feasibility of adopt the phytosanitary measures needed.

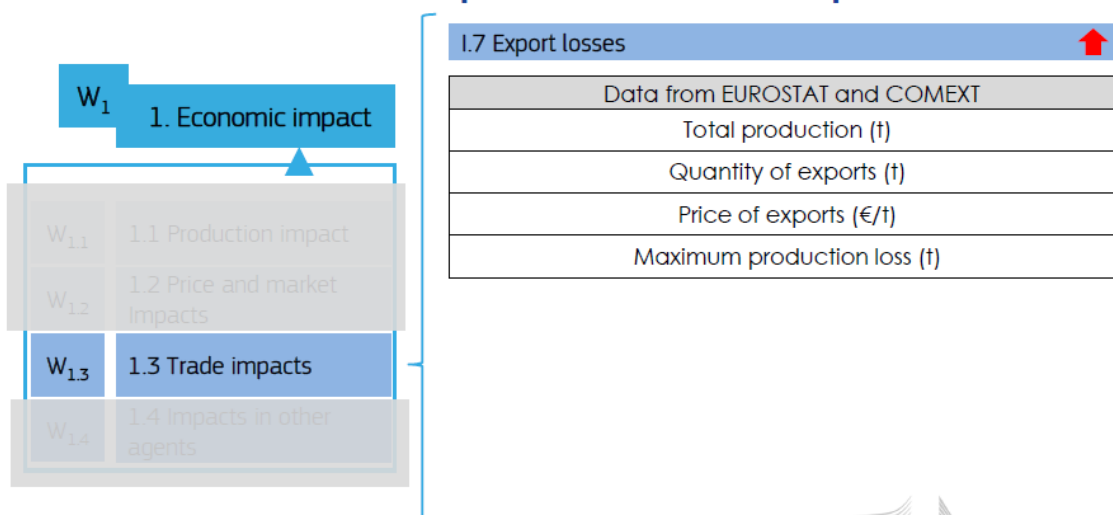## Indirect economic impacts – 1.2 Price and market impacts

1. Economic impact

W₁.₁	1.1 Production impact
W₁.₂	1.2 Price and market Impacts
W₁.₃	1.3 Trade impacts
W₁.₄	1.4 Impacts in other agents

I.5 Percentage of change in prices

I.6 Trade intensity

Data from EUROSTAT and COMEXT
Total production (t)
Quantity of imports (t)

European Commission

To evaluate the trade intensity, the "worst case" scenario is not a realistic way, due to, in this regard, the crops with a high value and with a wide crop area are always the most affected by the pest. The more realistic scenario, the one that have a higher probability according to expert judgment should also be considered.
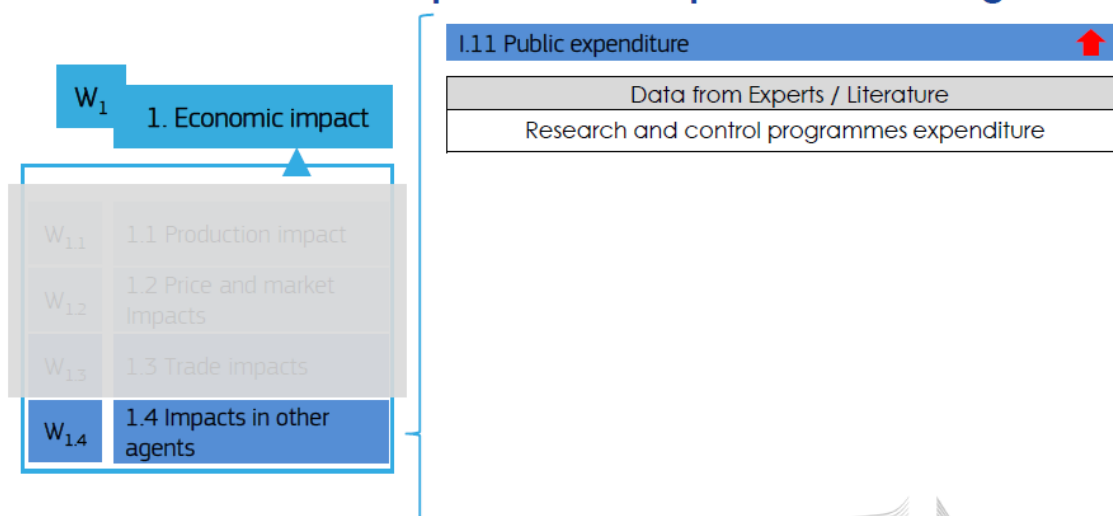
Indirect economic impacts – 1.3 Trade impacts

W$_1$	1. Economic impact
W$_{1.1}$	1.1 Production impact
W$_{1.2}$	1.2 Price and market impacts
W$_{1.3}$	1.3 Trade impacts
W$_{1.4}$	1.4 Impacts in other agents

I.7 Export losses
Data from EUROSTAT and COMEXT
Total production (t)
Quantity of exports (t)
Price of exports (€/t)
Maximum production loss (t)

European Commission

In addition to total production, quantity of exports, price of exports and maximum production loss, it should be also considered the cost and time required to reopening the trade with those third countries which previously banned it because of the pest, the economic importance of the market loss and whether if it is a single market (only one country) or a lot of them.

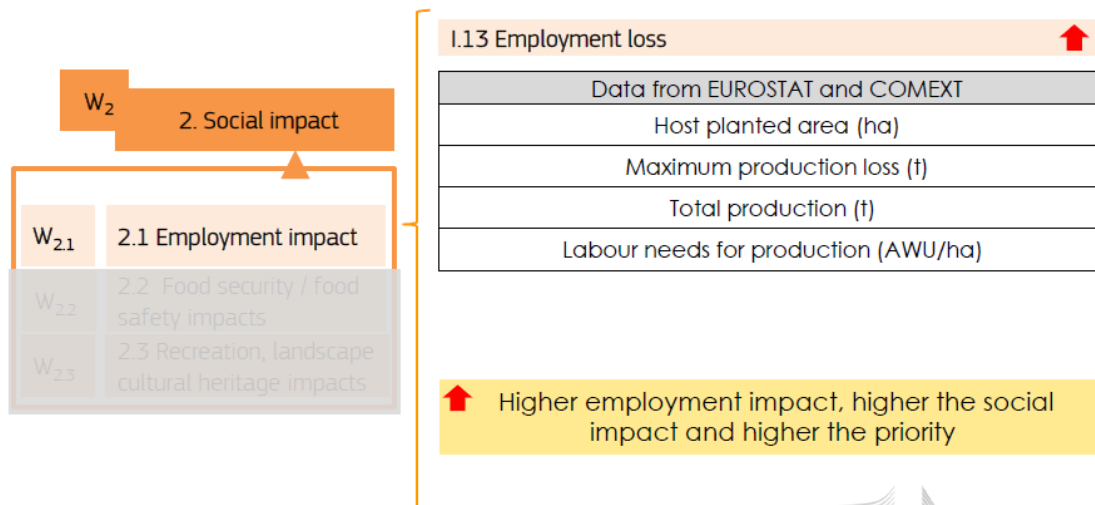## Indirect economic impacts – 1.4 Impacts in other agents

W$_1$	1. Economic impact
W$_{1.1}$	1.1 Production impact
W$_{1.2}$	1.2 Price and market impacts
W$_{1.3}$	1.3 Trade impacts
W$_{1.4}$	1.4 Impacts in other agents

I.11 Public expenditure
Data from Experts / Literature
Research and control programmes expenditure

European Commission

The sentence "Research and control programmes expenditure" should be changed to "Research and control programmes (including surveillance and analysis) expenditure".

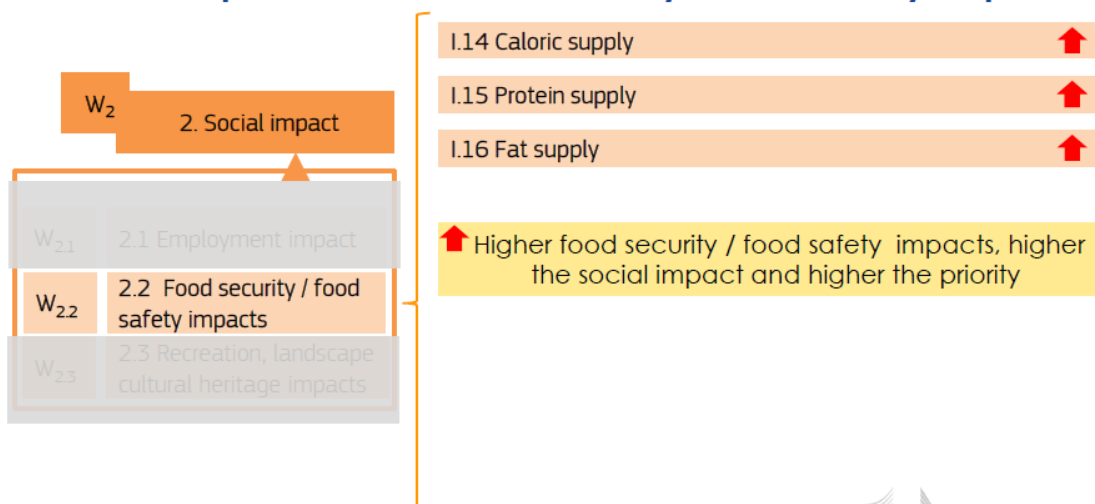## 2. Comments on the indicators used to measure the social impact:

Social impacts – 2.1 Employment impact

I.13 Employment loss

Data from EUROSTAT and COMEXT
Host planted area (ha)
Maximum production loss (t)
Total production (t)
Labour needs for production (AWU/ha)

Higher employment impact, higher the social impact and higher the priority

32

European Commission

> Other indicator to take into account should be the concentration of employment loss, since the impact of the pest on employment loss should be considered higher if it is concentrated in small areas than if it happens scattered in the whole EU territory, where more employment alternatives may be available.
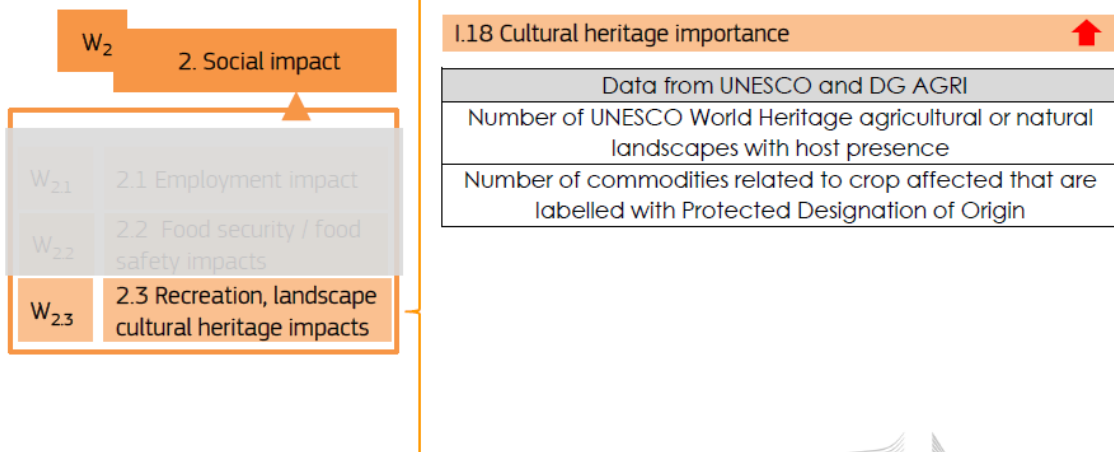
Social impacts – 2.2 Food security / food safety impacts

I.14 Caloric supply

I.15 Protein supply

I.16 Fat supply

Higher food security / food safety impacts, higher the social impact and higher the priority

36

European Commission

> In addition to caloric, protein and fat supply, it should be also considered other nutrients which provide health benefits, such as vitamin C, folates (vitamin B9) and omega 3.

Social impacts – 2.3 Recreation, landscape cultural heritage impacts

W₂ 2. Social impact

W₂.₁	2.1 Employment impact
W₂.₂	2.2 Food security / food safety impacts
W₂.₃	2.3 Recreation, landscape cultural heritage impacts

I.17 Degree of diversification

I.18 Cultural heritage importance

Data from UNESCO and DG AGRI
Number of UNESCO World Heritage agricultural or natural landscapes with host presence
Number of commodities related to crop affected that are labelled with Protected Designation of Origin

European Commission

Not only UNESCO World Heritage landscapes should be considered, but other important heritage plants, such as millennial trees, etc.