Food and Agriculture Organization of the United Nations

International Plant Protection Convention

FINDINGS FROM THE 2019 SEA CONTAINER QUESTIONNAIRE ON MONITORING OF SEA CONTAINER CLEANLINESS

A study for the IPPC Sea Container Task Force
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Executive summary

[1] Invasive pests travel around the globe in and on the agricultural and forestry products we trade. They also catch a ride on and in the millions of rail wagons, trailers and sea cargo containers that crisscross our oceans and continents on trains, trucks and ships.

[2] The Sea Containers Task Force (SCTF) was established to support the implementation of the Sea Container Complementary Action Plan (SCCAP) to reduce the pest risks associated with the movement of sea containers endorsed by CPM-12. The SCTF circulated a questionnaire among national plant protection organisations (NPPOs) to assess their current level of monitoring of sea containers and its outcomes, their implementation of existing guidelines and to gauge which data are being recorded and would be available for assessment by the SCTF.

[3] A questionnaire was developed and implemented online using the World Bank's Survey Solutions software. All 183 contracting parties to the IPPC plus 40 local contacts and information points of non-contracting parties were sent an email invitation which included a link to the online questionnaire. The invitations were sent out between 18-20 March 2019 with a deadline for submission of 16 August.

[4] Despite monthly reminders and a request to the CPM Bureau to advocate participation among contracting parties, participation was low, with only 36% of contracting parties (n=66) fully or partially completing the questionnaire (2 non contracting parties also participated – see the section on Questionnaire design, implementation and response for further details). An email asking for reasons for non-response was answered by 32 contact points. Not having time and personnel issues (e.g. personnel changes) were most commonly mentioned. Seven NPPOs answered that they could not provide answers as the topic was not considered relevant (e.g. due to being a landlocked country). Five NPPOs explicitly expressed an interest in the topic. One answered that data had been collected but not by the NPPO but by a port authority.

[5] The low response means that results are unlikely to reflect overall NPPO perceptions and activities related to sea containers and their cargo, and they should therefore be interpreted with care.

[6] Participation per region varied, with highest participation in North America (2 out of 2 countries), and lowest in the Near East (only 20% of all Near East contracting parties participated). In absolute numbers, most responses came from African countries (22), followed by European participants (14), and these regions therefore have a larger impact on the overall results presented in this report. Due to the low number of observations, results per region are not presented separately (as these would be based on very few observations for some regions).

Results

[7] The main results are discussed below and presented in Table 1 at the bottom of the Executive summary.

[8] Almost all responding NPPOs perceive containers and their cargo as a risk, but for around a quarter (18 out of 68 countries) this is only the case when the containers are carrying regulated articles. Only three countries did not consider them a risk, but two of these motivated their answer by saying they were landlocked and therefore did not receive sea containers directly. This may indicate a need to raise awareness among landlocked countries and add clarification in future questionnaires, as sea containers entering a country indirectly can still carry a risk.

[9] Close to half of all responding NPPOs (32 out of 68 countries) said they have regulations in place that allow them to deal with the risk of sea containers and their cargo. In all likelihood this is an underestimate as some countries seem to have misunderstood the question as only referring to having regulations specifically relating to containers, rather than any regulations that allow them to inspect containers and act upon found pests.

[10] Of the 66 NPPOs that responded to this question 54 said they inspect containers and their cargo, mostly in targeted inspections (n=32), but also as part of inspections not directly targeting containers (n=22). Most commonly NPPOs that inspect containers do so following official national procedures or guidelines (30 of the 46 countries that inspected containers). Existing industry guidelines such as the CTU Code and the Joint Industry Container Cleanliness Guidelines were each mentioned by only one respondent. The inspections predominantly took place in the port of (un)loading, or in a container depot or (un)packing location.

[11] Measures were taken or authorised if risks on imported containers or their cargo were found said 51 of the 62 countries that answered this question, while 43 NPPOs said to do the same with ready-to-export containers. Of the eight countries that said not to take measures, some indicated they saw no risk, and one country indicated there was no provision for this within their legislation. The most common measure for imported containers is rejection, but cleaning and/or treating containers was also a commonly selected answer. Cleaning and/or treating containers is the most common measure for ready-to-export containers, with equal numbers indicating they would do this with and without unpacking containers first (most do both).

[12] Pests, organisms or other contamination were encountered by almost three quarters of the NPPOs that answered this question (46 out of 61 countries that answered this question). The remaining 16 NPPOs said they had not encountered anything or did not inspect containers. The most commonly selected pre-listed answer options – those selected by at least half the responding NPPOs – were:

- Insects (beetles, flies, etc.) – selected by 39 countries[1]
- Soil – selected by 36 countries
- Plants/plant products/plant debris – selected by 31 countries
- Seeds – selected by 30 countries

[13] All but four of the 43 countries that had found pests on containers and that answered this follow-up question said these included quarantine (32 countries) and non-quarantine pests (35 countries), and 28 NPPOs indicated both. A full list of these pests is included in the annexes. There is not a lot of overlap in the indicated pests, and no quarantine pest was entered by more than three respondents; for non-quarantine pests, this was four respondents. Most pests were found alive or both dead and alive. Almost no-one indicated only to have found dead examples of the pests.

[14] Of the 58 NPPOs that responded to this question, 36 said they did not have an information management system in which information about containers and their cargo was stored. Those countries with a system most commonly enter data about presence of pests (n=18) and the type of contamination (n=17). Contamination location is also entered by more than half the countries with a system (n=14), but the level of contamination (e.g., high/low) is less commonly stored (n=9), and only a minority (n=5) store information about absence of contamination, indicating that structural data keeping necessary to determine the proportion of containers that harbour pests is uncommon. Most countries with an information management system said they were willing to share this information with the SCTF (17 countries).

Table 1 Summary of main results

Questions	# countries
Are containers and their cargo seen as a risk for spreading pests?	**68**
Yes, regardless of the type of cargo	47
Yes, but only if carrying regulated articles	18
No	3
Are regulations in place to deal with the risk of containers and cargo?	**68**

[1] In the questionnaire this answer option was included near the bottom of the pre-listed answers and phrased as "Other insects (including beetles, flies, etc.)". Ants, moths, wasps and bees were included in other pre-listed answer options and therefore are not included in this answer.

Yes	32
Future plans	15
No	21
Are there inspections of containers and cargo?	**66**
Yes, focussed specifically on containers and their cargo	32
Yes, but not as separate inspections focussed on containers	22
No	17
Are measures taken if risks on containers and cargo are discovered?	**62**
Yes, on imported containers	51
Yes, on ready-to-export containers	43
No	8
Are pests, other organisms or contamination found on containers and cargo?	**61**
Yes, including quarantine pests	32
Yes, including non-quarantine pests	35
No, not found or containers and cargo not inspected	16
Is there an information management system for container-related information?	**58**
No	36
Yes (to varying degrees)	22

Introduction

[15] Invasive pests travel around the globe in and on the agricultural and forestry products we trade. They also catch a ride on and in the millions of rail wagons, trailers and sea cargo containers that crisscross our oceans and continents on trains, trucks and ships. Once introduced, pests are very difficult and expensive to control or eradicate. They can severely damage agricultural production, affect property values, and reduce water availability and quality. The total cost of lost revenue and clean-up can run into billions of dollars.

[16] CPM Recommendation (R-06) on sea containers was adopted by CPM 10 with the purpose to protect agriculture, forestry and natural resources against pests. This recommendation includes the encouragement by the Commission for national plant protection organisations (NPPOs) to recognize the risks that sea containers might pose, support the implementation of existing guidelines related to container hygiene and cleanliness, such as the IMO/ILO/UNECE Code of Practice for Packing Cargo Transport Units (CTU Code) and the Joint Industry Guidelines for Cleaning of Containers, and gather information on pest movements via sea containers, among others.

[17] The Sea Containers Task Force (SCTF) was established to support the implementation of the Sea Container Complementary Action Plan (SCCAP) to reduce the pest risks associated with the movement of sea containers endorsed by CPM-12. The SCTF decided to circulate a questionnaire among NPPOs with the following objectives:

- to assess NPPOs' current level of monitoring of sea containers
- to assess NPPOs' implementation of existing industry guidelines for container cleanliness
- to assess what type of data about container cleanliness was currently collected by NPPOs
- to request NPPOs to share the collected data with the SCTF

Questionnaire design, implementation and response

[18] In its second meeting in November 2018, the SCTF approved a draft of the sea container questionnaire, which was further developed and programmed into web-based survey software in January and February 2019. Late February, invitations to pre-test the questionnaire online were sent to 15 NPPOs and 8 SCTF members and other interested parties. Ten responses were received back. Using comments from the pre-test, the English questionnaire was finalised on 1 March and sent out for translation in all other official FAO languages: Arabic, Chinese, French, Russian, and Spanish. After proofreading the translations by native speakers of the IPPC Secretariat, the questionnaire circulated among NPPOs on 18 March.

[19] The questionnaire was made available online only using the World Bank's Survey Solutions software and internet server. All 183 contracting parties to the IPPC plus 40 local contacts and information points of non-contracting parties were sent an email invitation which included a link to the online questionnaire. Internet access was necessary while filling out the questionnaire, but this could be paused and re-started at any time without the loss of entered information. As decided by the SCTF, a deadline for responses was set for 16 August to allow time for analysis and reporting before the next SCTF meeting in September 2019. Reminders were sent each month to those who had not completed the questionnaire, the last sent on 5 August. Furthermore, in June the CPM Bureau was asked to advocate participation among contracting parties.

[20] Of the 213 invitations sent, 74 countries opened and left responses, but 6 of these did not go beyond the first or second question and were excluded from the analysis.[2] This left 68 responses, 66 from

[2] One further country only filled out the first two questions, but left a comment to explain why they thought the questionnaire was not relevant to them. These answers are included. See Annex 1 for the list of countries that were included in the analysis.

contracting parties to the IPPC, and one IPPC local contact and information point each. The latter two countries are included in the main results as it made no sense presenting results separately for only two countries. Both are from the Southwest Pacific region.

[21] Among contracting parties, the response rate was only 36%. A follow-up email asking for reasons for non-response was answered by 32 contact points. Not having time and personnel issues (e.g. personnel changes) were most commonly mentioned. Seven NPPOs answered that they did not provide answers as the topic was not considered relevant (e.g. due to being a landlocked country). Five NPPOs explicitly expressed an interest in the topic together with another reason for not responding. One answered that data had been collected but not by the NPPO but by a port authority. One other NPPO said it would have been useful to have a hard copy of the questionnaire. This had been considered but decided against, due to worries that NPPOs might return the hard copy rather than completing the questionnaire online.

[22] The low response rate means that results presented here are unlikely to reflect the perceptions and activities of all NPPOs, and they should therefore be interpreted with care. Due to the low response, to avoid a false perception of representativeness, results are not expressed in percentages; instead, the actual number of countries that selected particular answers will be shown.

[23] Figure 1 shows the number of responses and the proportion of responding contracting parties per region.[3] The higher the (absolute) number of responses from a particular region, the more influence it will have on the overall results presented in this report. For example, the 22 responses from African countries will carry a relatively heavy weight.

[24] Due to the low number of responses, no regional results are presented in the remainder of this report, as for some regions these would be based on a very small number of respondents and could therefore be far off the mark for the region as a whole.

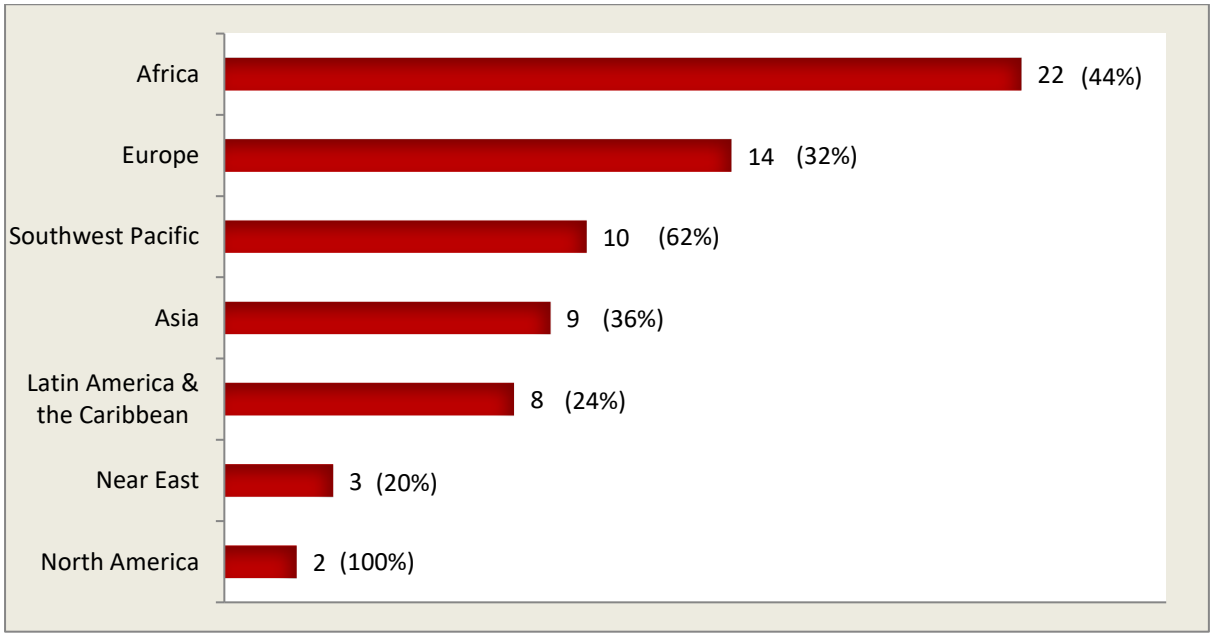

Figure 1 Number of participants per region, and proportion of all contracting parties per region

[25] The questionnaire covered the perceived threat level of sea containers and their cargo, existing legislation, inspections, measures, the type of pests found, and finally the data collected by NPPOs. Most questions had multiple choice answers, with the possibility to enter non-listed answers.

[3] The numbers include the two non-contracting parties, but the proportions are for contracting parties only (there were 10 responses from the Southwest Pacific region, but only 8 contracting parties from a total of 13 in the region: 62%).

Comments could be left with each question. The English version of the questionnaire is included in Annex 1.

[26] In its second meeting in November 2018, the SCTF decided to include cargo of non-regulated articles in the questionnaire, as it was seen that pests can be introduced to containers via such cargo if the cargo itself carries pests, soil, plant debris, egg sacs, etc. This was explained in the questionnaire after question 1, and a note was added to each later question that mentioned cargo to indicate "this referred to cargo in general, not only cargo of regulated articles that is itself associated with pest risks". Despite these notes, some answers (and comments left with answers) do indicate that these reflected actions or perceptions relating to cargo of regulated articles, rather than to the containers and cargo in general.

[27] The questionnaire consistently used the term sea (shipping) container; in this report the word container refers to the same.

Results

Risk perception and existing regulations

[28] The questionnaire started by asking how NPPOs assessed the risks related to sea containers and their cargo. Almost all responding NPPOs perceive containers and their cargo as a risk, but for around a quarter this is only the case when the containers are carrying regulated articles (Figure 2). One country that considers containers a risk regardless of their cargo did indicate that the level of risk is higher for containers carrying regulated articles or wood packaging. Only three countries said not to perceive containers as a risk, but the term *sea* container may have been misleading here, as two of these countries motivated their answer by saying they are landlocked countries and therefore do not receive sea containers, at least not directly.

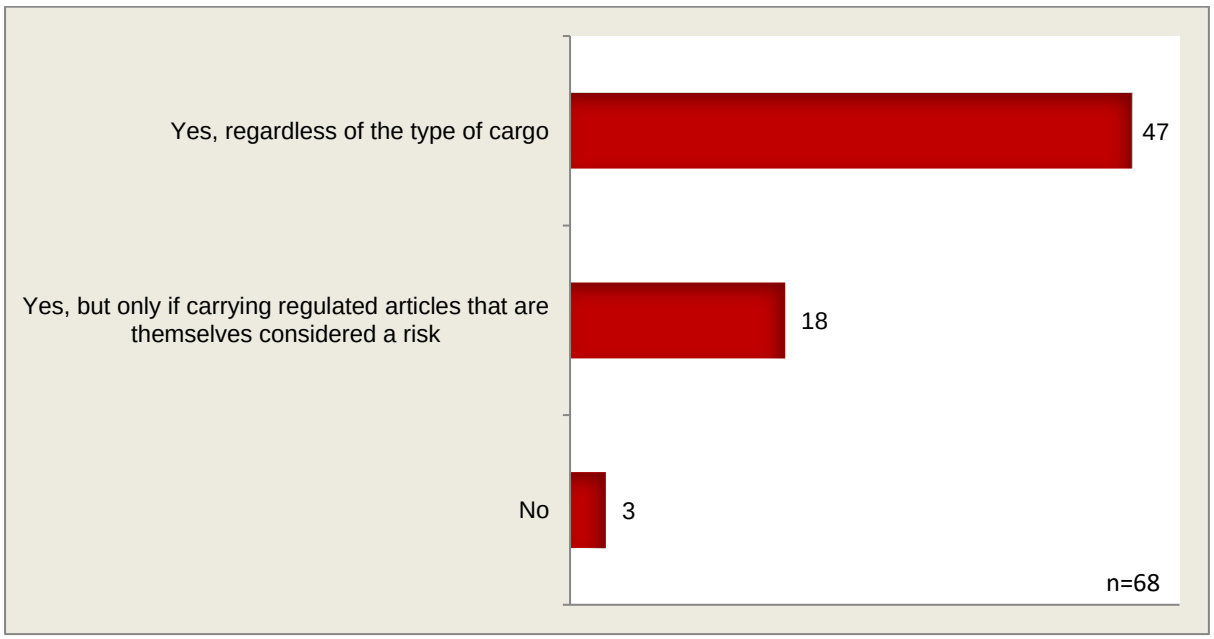

Figure 2 Risk perception

[29] Close to half the responding countries have regulations in place to deal with the risks associated with containers and their cargo, while close to a third did not and the remainder indicated such regulations were being developed (Figure 3). However, the real number of countries with regulations is probably higher. Some countries seem to have interpreted the question as asking about specific container-targeted regulation, rather than any regulation that would allow inspection of containers and necessary action. For example, two EU Member States indicated the EU is responsible for this and has no relevant regulations. However, three other Member States indicated that while specific regulations did not exist, it is possible to have risk based controls, and other countries made similar comments.

[30] Having regulations in place is more common among the countries that see containers as a risk regardless of the type of cargo: 55% of these countries said they had regulations versus just under 30% for those who do not see containers as a risk or only when carrying regulated articles. The exact proportions should be interpreted with care due to the low number of observations.

[31] Countries without regulations were asked to explain. Reasons given included that there was no need (no risk, or not too relevant), or regulations would be too difficult to implement.

[32] Countries that indicated to have regulations were asked to send these by soft or hard copy to the IPPC Secretariat or to provide an internet link if the regulations were available online. Half the countries

(16) provided an internet link; 2 indicated to send their legislation; 2 referred to the regulations or laws themselves; 9 did not enter any answer.[4]

[33] These countries were also asked to list the authorised bodies or agencies tasked with implementing these regulations, which most countries did. These answers have been stored in the database and a separate list in the data files Dropbox folder.

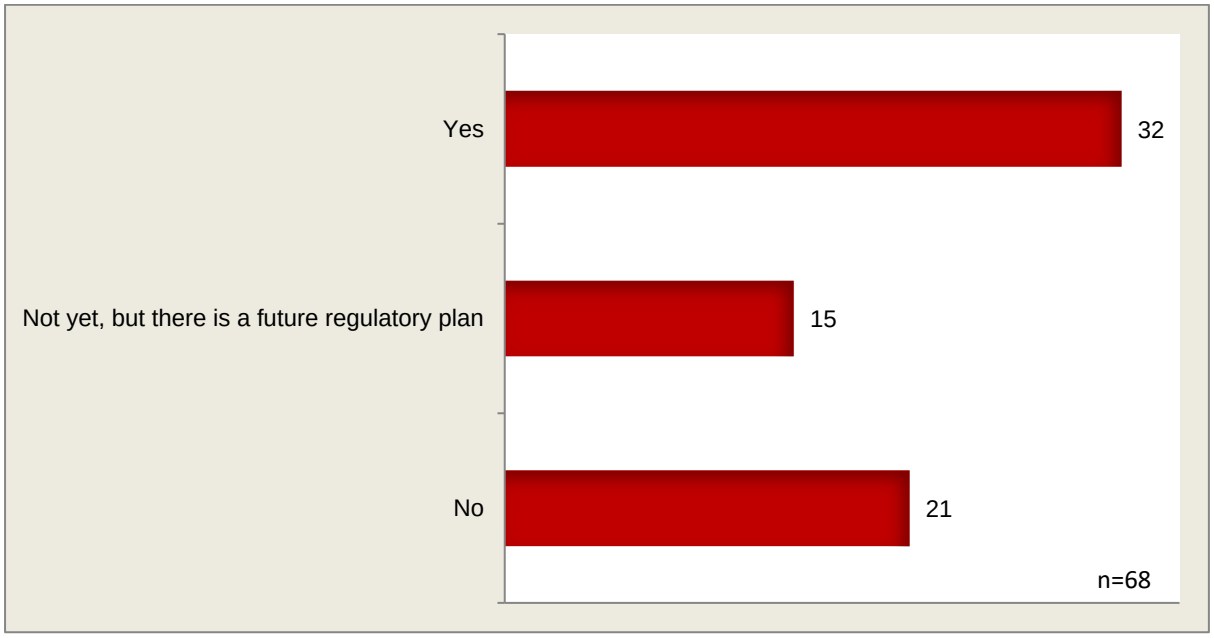

Figure 3 Regulations in place to deal with risks of containers and their cargo

Inspections

[34] All countries were asked whether they undertake or authorise inspections of empty and/or packed containers and their cargo.[5] As shown in Figure 4, most countries do inspect containers, mostly through specifically targeted inspections, but containers are also controlled as part of other inspections (five countries indicated to do both). One country commented that focussed inspections mostly take place when containers carry agricultural cargo.

[35] Countries that said to have regulations in place to deal with the risks of containers were more likely to hold inspections, but a majority of countries where regulations were only in a planning phase still said to inspect containers (mostly in non-targeted inspections) and a minority of countries without regulations indicated the same. While it is not certain what caused this apparent inconsistency, as stated above, some respondents seem to have read the question about regulations too narrowly.

[36] A quarter of the responding countries indicated not to inspect containers. Reasons not to hold inspections included:

- Not considered a risk, and insufficient capacity;
- Regulations only allow the inspection of regulated articles;
- Only on suspicion of quarantine pests;
- There is no capacity to inspect large amounts of empty containers or those carrying non-phytosanitary cargoes;

[4] At the time of finalising this report (November 2019), two countries had sent legislation. A separate list of the links is available in the data files Dropbox folder.
[5] Respondents were asked to say no if they only inspected containers carrying regulated articles.

- Only regulated articles carried in containers are inspected, but not containers themselves as this would lead to long delays, and lead to chaos at the customs levels due to the large number of containers that would need to be retained for inspection;
- Lack of information about this issue;
- Containers are not inspected at border crossings that are designated to stop the introduction of a plant pest. Containers are sealed from the seaport to the consignee (landlocked country).

[37] All NPPOs that hold inspections do so for packed containers, while about half also inspect empty ones. Two countries elaborated their answer by saying that empty containers are inspected if they are to carry agricultural produce.

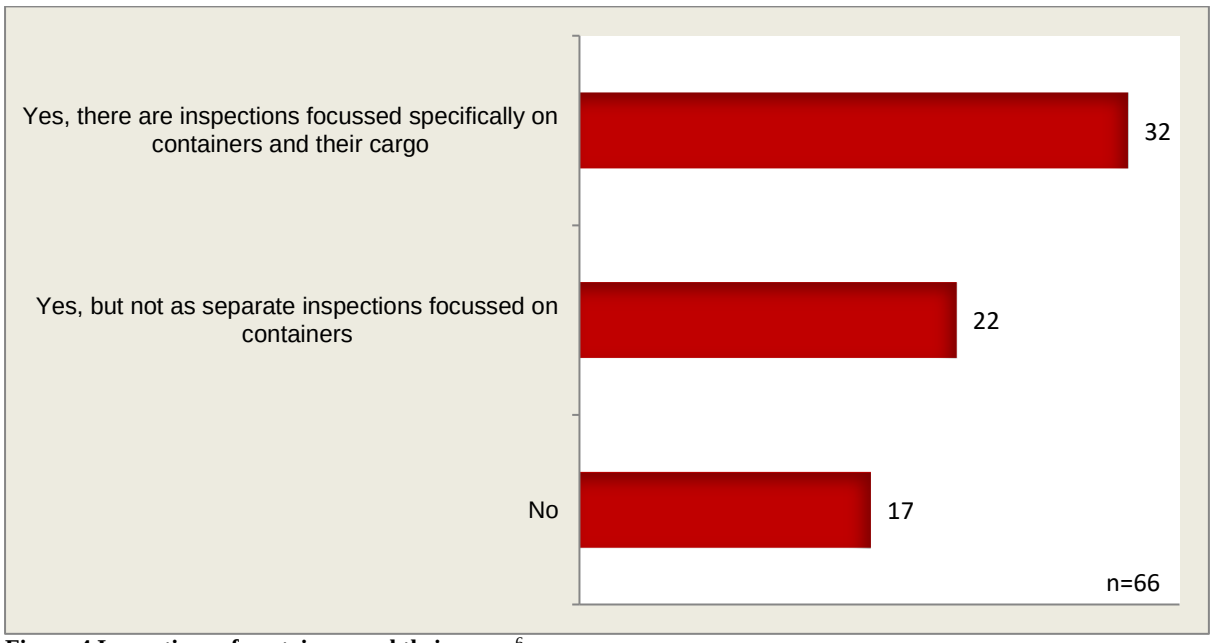

Figure 4 Inspections of containers and their cargo[6]

[38] Three quarters of the countries that inspect containers and answered this questions (n=46) said they follow official written procedures for these inspections.[7] Mostly these are national procedures or guidelines (Figure 5). Quite a few countries also selected the IPPC guidelines on sea container surveys. These were published only in March 2019, and sent out together with the launch of this questionnaire, so it is somewhat questionable to what extent these have actually already been implemented or whether these answers reflect what might have been thought of as a 'desirable answer' or reflect future plans.

[6] Two countries did not answer this question; more than one answer could be selected.

[7] One country was excluded from this question on, as its answer pattern became unreliable.

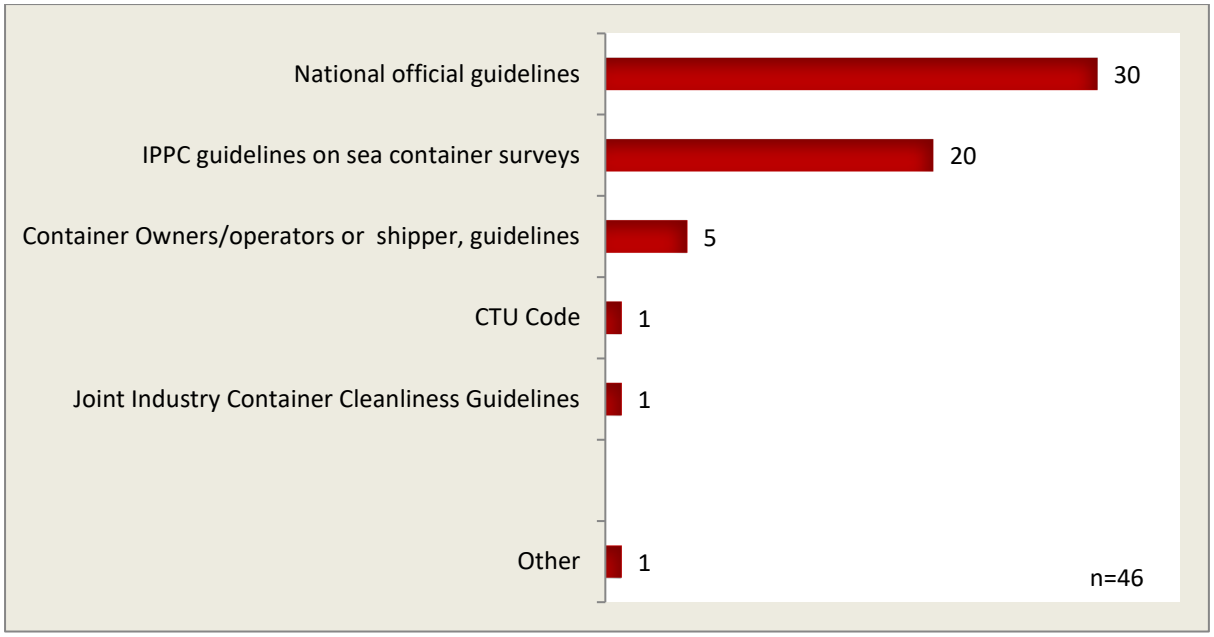

Figure 5 Guidelines used for inspection

[39] Imports in general are usually inspected within the country of the NPPO, but several NPPOs have also organised inspections in the country of export. To accommodate the latter, the pre-listed answer options for the question where inspections of containers and their cargo usually take place also included locations abroad. A separate question was asked for imported and ready-to-export containers.

[40] Imported containers are mostly inspected at the port of unloading or a container depot or unpacking location within the importing country, but 15 countries also different locations abroad (Figure 6).[8] As this question related to inspections done under the authority of the *responding* NPPO, the relatively large number of respondents who selected locations abroad is surprising and perhaps shows that (some) respondents also included inspections done by foreign NPPOs. If there was a misunderstanding, the overall results should not be too distorted as just two countries *only* selected locations abroad.

[8] Respondents could select more than one answer.

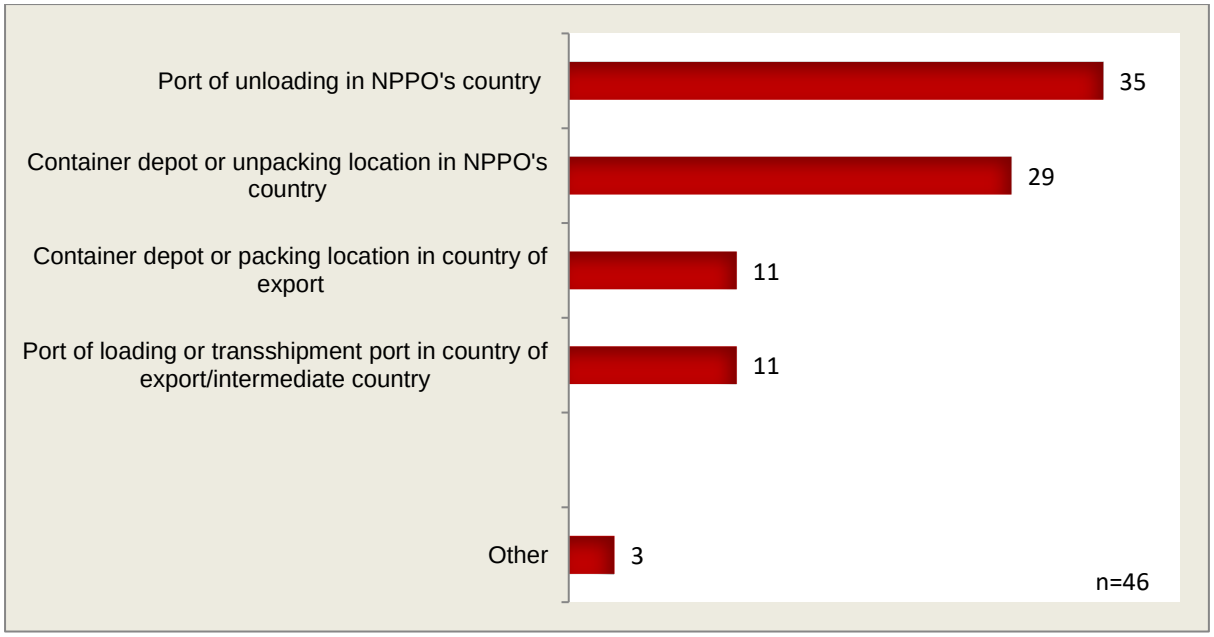

Figure 6 Inspection locations of imported containers

[41] Ready-to-export containers are inspected by fewer countries. Besides the six countries indicated in Figure 7 that said not to hold such inspections, there were a further two countries where such inspections do not always take place (depending on work plans, or different regimes in different regions of the country). For those countries that do inspect ready-to-export containers, the container depot or packing location and the port of loading are almost equally frequent locations.[9]

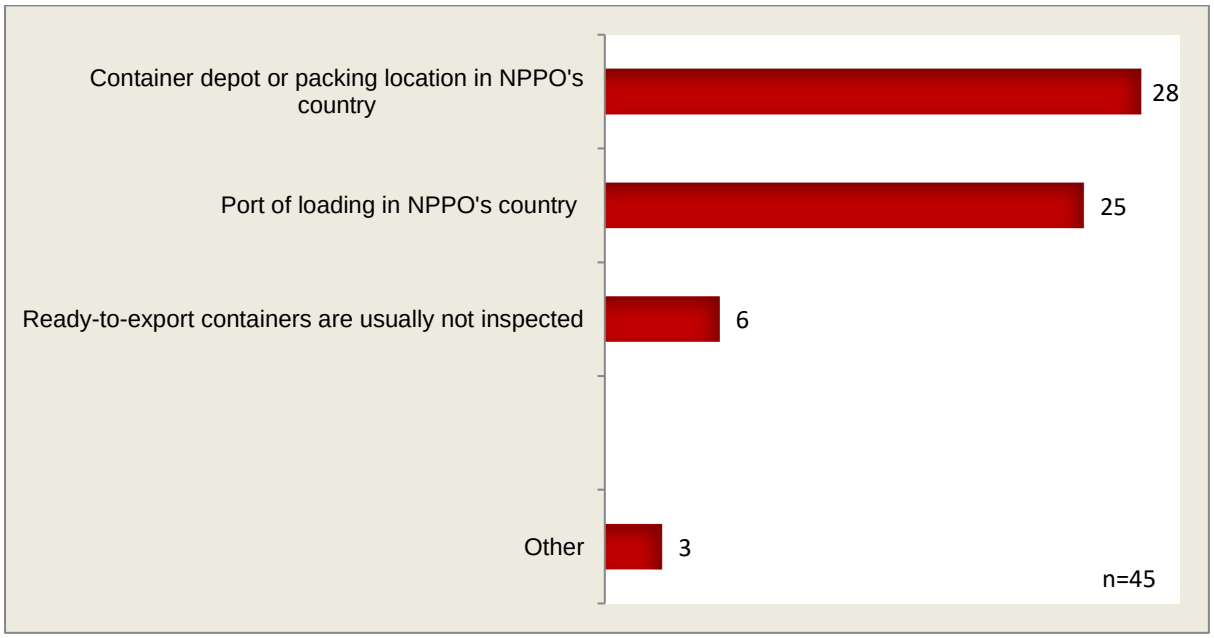

Figure 7 Inspection locations of ready-for-export containers

[9] One country that indicated to check ready-to-export containers in container depots or the packing location considered these to be empty containers ready for loading with export goods covered by a phytosanitary certificate. This NPPO did not say whether other ready-to-export containers were inspected.

Measures

[42] All NPPOs, regardless of whether they ran container inspections were asked whether they apply or authorise phytosanitary measures in cases where risks had been identified.[10] Countries were asked to indicate this separately for imported and ready-to-export containers. Of the 62 countries that answered this question, 51 said they apply or authorise measures on imported containers, and 43 also do so on ready-to-export containers. There were two countries that said to apply measures on ready-to-export containers but not on imported ones. One of these indicated its government's policy meant it did not to have much control over imports.

[43] Only eight countries said not to apply measures. The reasons for not doing so included:

- We are not aware of risks related to sea containers, but if we knew about a risk on imported containers, we may ask to apply phytosanitary measures;
- Containers are not inspected, only the regulated articles inside;
- Our law does not provide provisions of this kind;
- No risks have been identified;
- Of course there are risks but goods do not come directly into our country but are inspected by countries with sea ports (answer from a landlocked country).

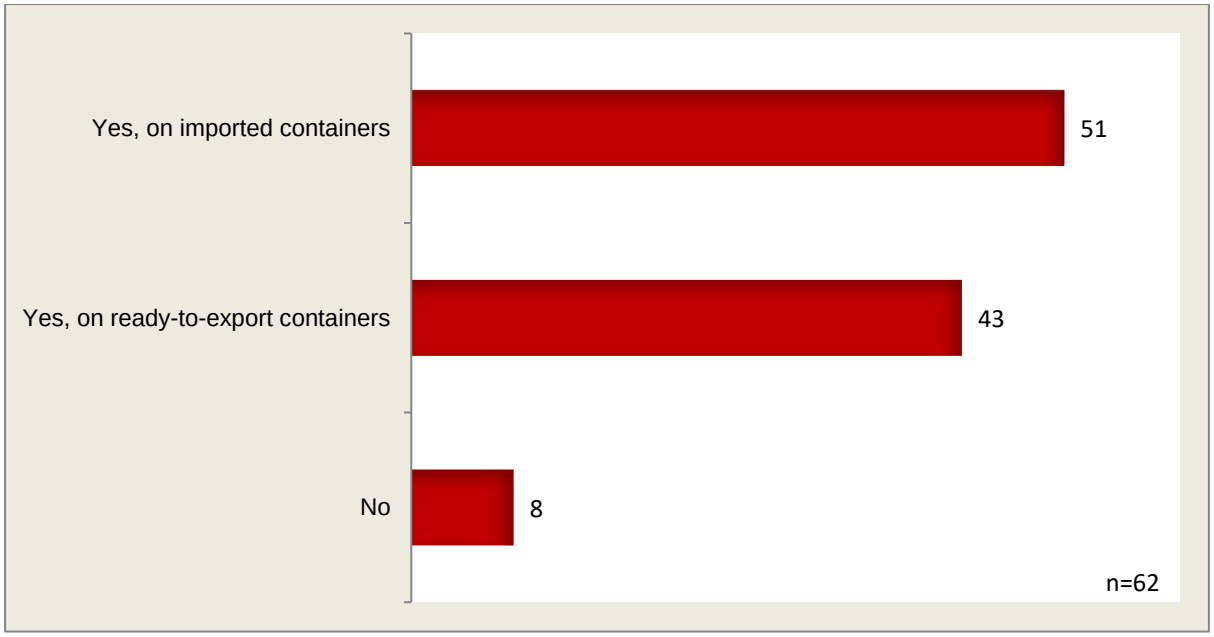

Figure 8 Phytosanitary measures taken on imported and ready-to-export containers

[44] Countries that said to take or authorise measures on *imported* containers after the discovery of a phytosanitary risk were asked what those measures were. Among the 50 countries that answered this question (one did not), the most common measure is rejection of the empty or packed container (Figure 9). Empty containers are also often treated and/or cleaned, and for packed containers, it appears slightly more common to clean and/or treat them without first unpacking, but most NPPOs clean/treat both with and without unpacking. This will undoubtedly depend on the level and location of the discovered risk, with pests or contamination perhaps more easily detected on the outside of containers. Most respondents selected at least two of the prelisted answer options, but among those who only selected one, more than half selected rejection of the container.

[45] Countries that selected the "other" answer were asked to specify, but of those that did no actual other measures were given; mostly they elaborated on procedures or responsibilities. For example, some

[10] The reason for also asking countries that do not regularly inspect containers was that the NPPO may be made aware of risks associated with a container through other ways, for example by chance discoveries.

countries said that the measures depended on the risk level, and one country indicated that cleaning and/or treating containers is the responsibility of the container management company. Two countries also indicated that containers would be treated if necessary, but without specifying whether this applied to packed or empty containers.

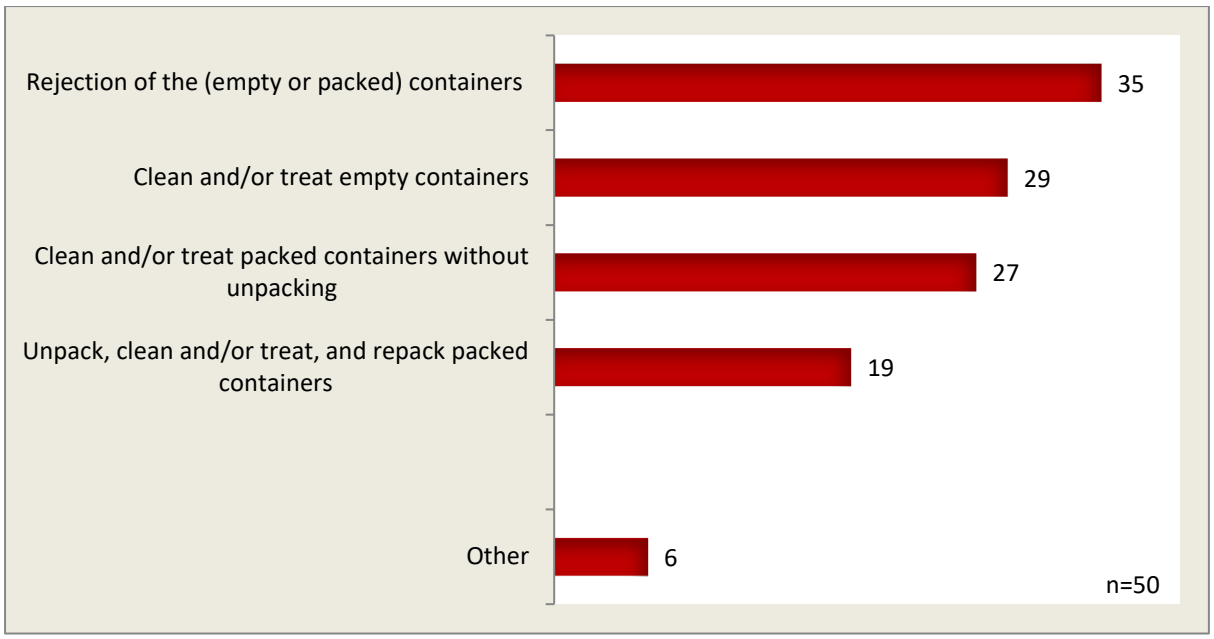

Figure 9 Types of measures taken if phytosanitary threat is found on imported containers

[46] Among the 42 countries that said to take measures on *ready-to-export* containers, 29 clean and/or treat empty containers. Packed containers are cleaned and/or treated with and without unpacking by a similar number of countries, and 17 countries do both. Two of the latter said the choice of whether to unpack or not depended on the commodity being carried in the container. Of the seven countries that selected the "other" option, four said they would withhold the phytosanitary certificate. Other answers were that it again depended on the risk level, or that treatment would be applied if necessary.

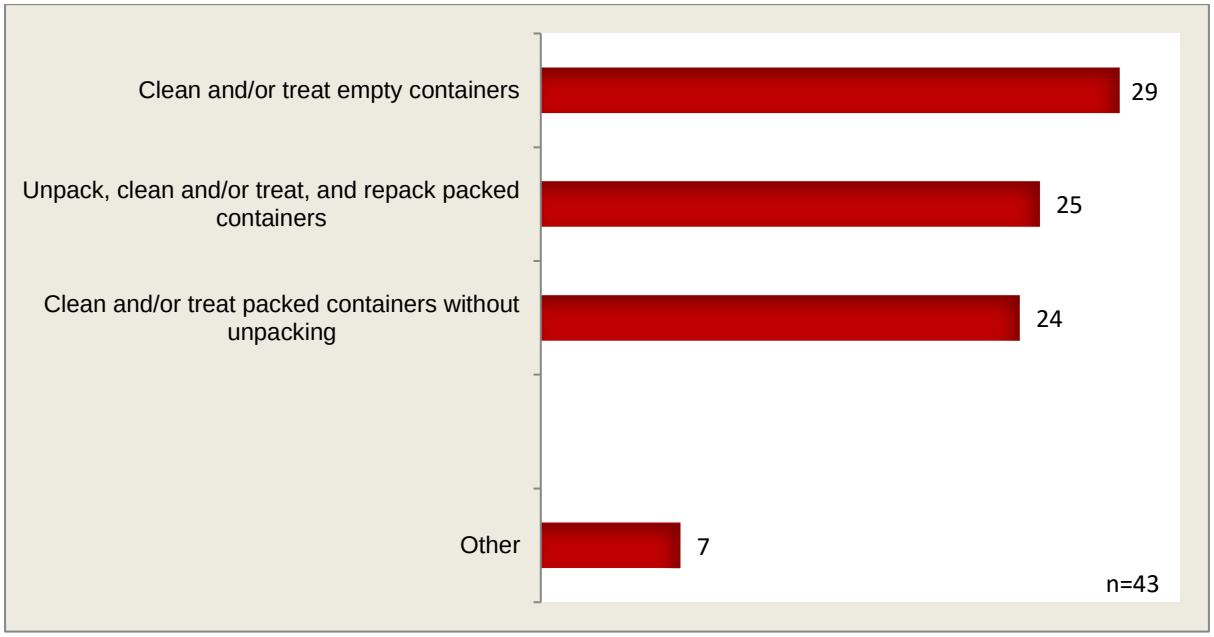

Figure 10 Types of measures taken if phytosanitary threat is found on ready-to-export containers

Pests, organisms or contamination encountered on containers and their cargo

[47] Regardless of previous answers, all countries were asked about the main pests, organisms or contamination they had encountered (if any) on and in sea containers and their cargo. Sixty-one countries answered this question. Around a quarter of these indicated not to have encountered anything or not to hold inspections of containers (half of these had indicated earlier in the questionnaire not to hold inspections).

[48] As shown in Figure 11, the pre-listed options that were selected most often (by half or more of the respondents) were:

- Other insects (including beetles, flies, etc.);
- Soil;
- Plants, plant products or debris;
- Seeds.

[49] Quite a few countries indicated "other contamination potentially harbouring pests". Where specification of these answers was given, these were mostly examples of earlier listed categories, rather than additional categories of pests, organisms or contamination. Where possible these answers were corrected, but most countries that ticked the "other" option did not specify their answers and we do not know whether their answers really refer to other types of contamination.

[50] Specified other contamination that wasn't included in the prelisted options was dust, sawdust, wood shavings and extraneous matter. Examples of animals found were lizards, snakes, mice, bats and cane toads.

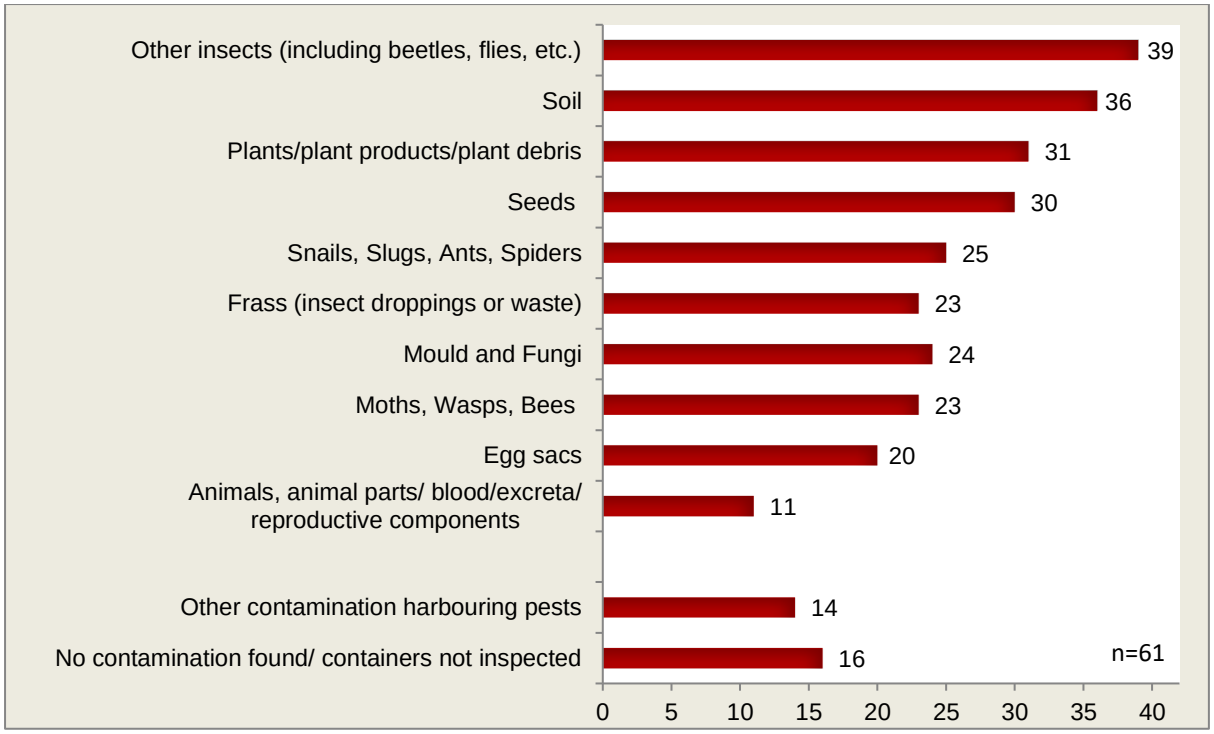

Figure 11 Pests, organisms or contamination encountered on/in containers and their cargo

[51] Of the 43 countries that indicated to have found any of the pests, organisms or other contamination mentioned above, and that answered the following question, all but four had found quarantine or non-quarantine pests among the contamination (Figure 12), and 28 countries found both.

[52] If NPPOs indicated they had encountered quarantine pests on containers and their cargo, they were asked to provide the Latin names of the most common ones found. For each entered quarantine pest, respondents were also asked to indicate the pests' status as found: dead, alive, or both dead and alive.

Of the 32 countries that had encountered quarantine pests, 22 entered names and pest status. A full list of the entered quarantine pests can be found in Annex 2, together with the frequency with which they were mentioned (only a few were mentioned by more than one country, and no pests were mentioned by more than three countries – Monochamus spp. and Trogoderma spp.), and the status of the pest as found.

[53] Of the 35 countries that said they had found non-quarantine pests on containers and their cargo, 22 entered names of these, and 21 countries indicated the status of the pests found. A full list of non-quarantine pests can be found in Annex 3. Again, only a minority of the pests were mentioned by more than one country and no pest was mentioned by more than four countries (Rhizopertha dominica and Tribolium castaneum).

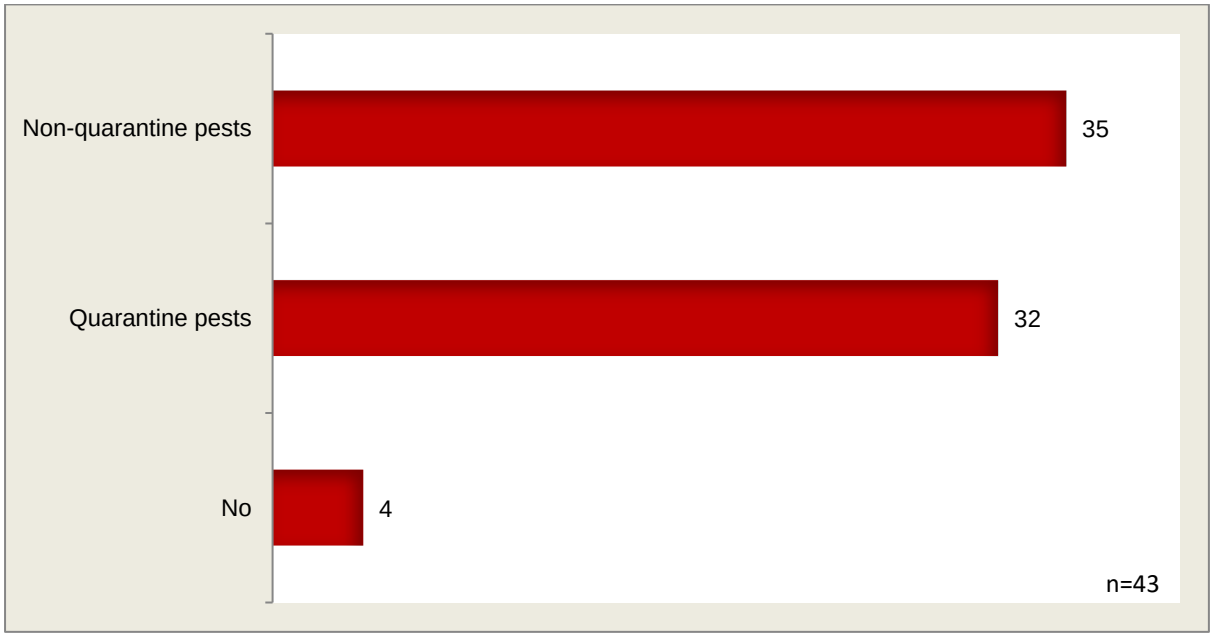

Figure 12 Quarantine and non-quarantine pests

[54] All NPPOs were asked what they did if non-plant pests were encountered on containers and their cargo, for example pests that pose a potential risk to human, livestock or wildlife health. Most NPPO said they contact the relevant agency responsible for the type of pest found (Figure 13). Interestingly, of the 38 countries that selected this answer option, 8 indicated that the NPPO is also responsible for non-plant pests. This seems contradictory, but it is possible that these NPPOs are responsible for some non-plant pests but not all, or that a different division within the same organisation is responsible.

[55] All of the respondents that specified their "other" answers (n=3) said they would treat the container, with one of these saying that if non-plant pests were found, this could also indicate plant pests were present, which therefore warranted treatment.

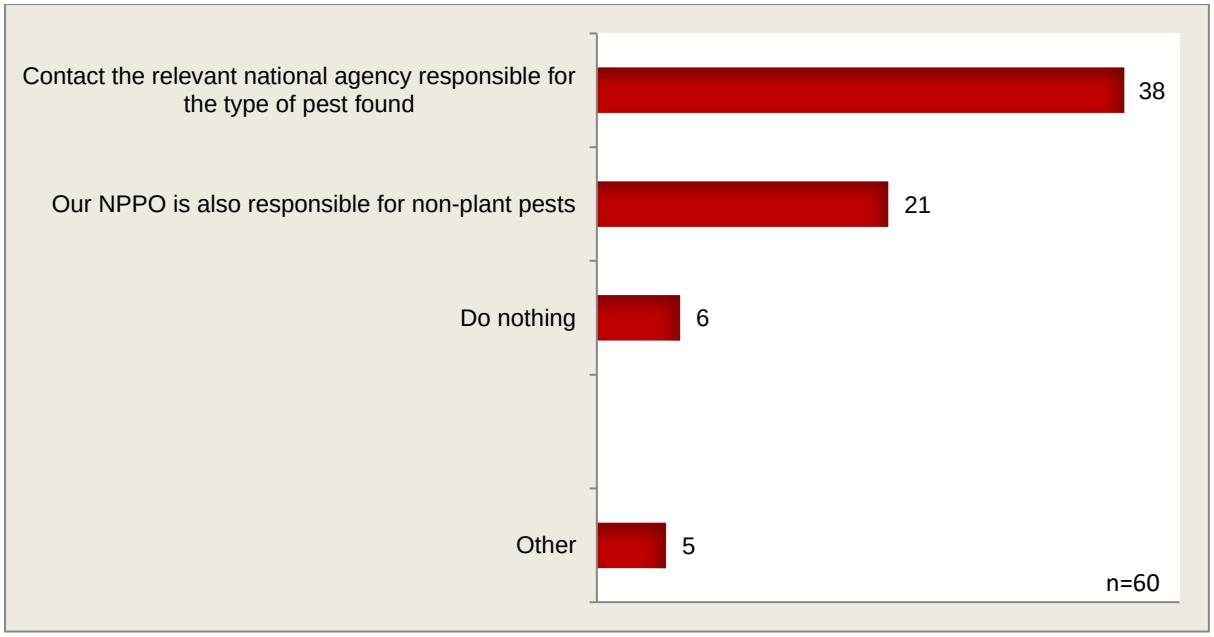

Figure 13 Actions taken if non-plant pests are encountered on containers and their cargo

Information management systems for container information

[56] All NPPOs were asked whether they have access to an information management system in which information about pests and other contamination found on containers and their cargo is kept, and if so, to indicate what type of information is stored in the system. Close to two thirds of responding countries do not have such a system (Figure 14). The two countries that selected the "other" option indicated that information is stored (e.g., on forms), but this is not entered into a database.

[57] For those countries that do have information management systems, the presence of contamination is most often stored together with the contamination type (e.g., soil, dead/live insects). The contamination location was also recorded by more than half the responding NPPOs that have a system.[11] The contamination level (e.g., high or low) is less often recorded, and especially the lack of tracking absence of contamination indicating that structural record keeping necessary to determine the proportion of containers that harbour pests is uncommon.

[11] One country indicated that quarantine pests and new harmful organisms found on imported containers is usually transmitted to EUROPHYT, but that this is not possible for contamination found on exported containers or if the contamination is of low phytosanitary risk. Furthermore, it is not possible to find out from the system if the contamination related to the container or to the packaging of the goods.

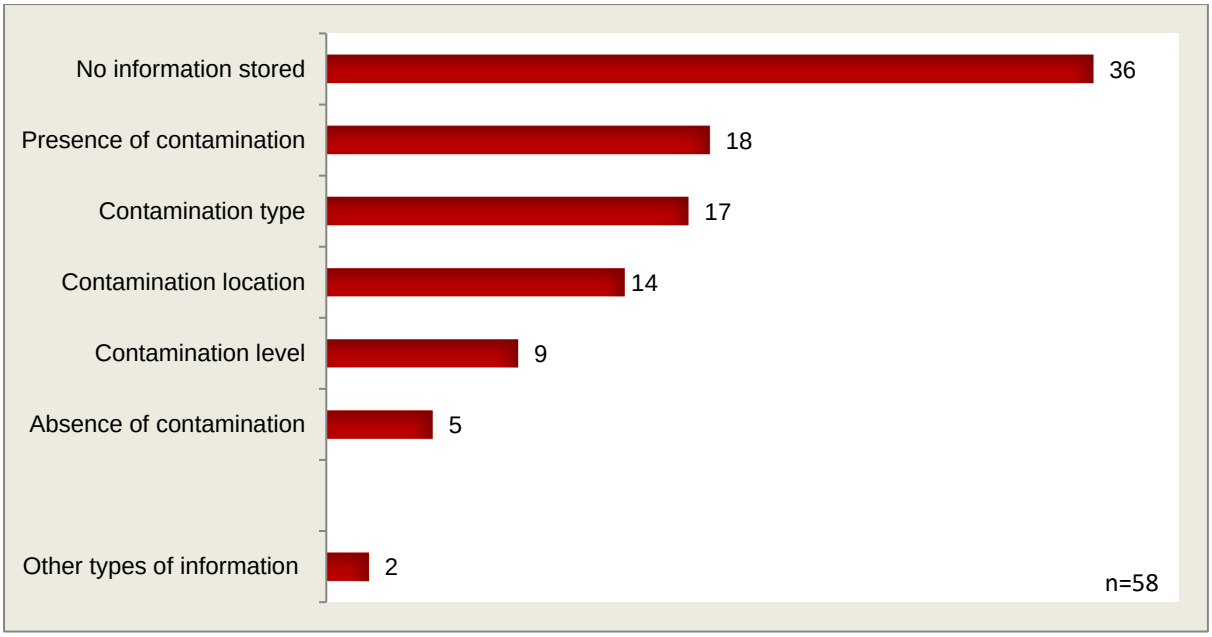

Figure 14 Information about container cleanliness stored in information management system

[58] Of the 23 countries that said to have some form of data storage system, 22 answered the next question whether they would be willing to share this information with IPPC Sea Container Task Force, to which 17 said yes.[12] These countries were then informed how they could best share this information. Of the five countries that said they could not share these data, three answered that the records were only kept in hard copy.

[59] The NPPOs with database systems were also asked whether they publish information on sea container cleanliness and phytosanitary risks related to containers. Only five said they did; three of which online (they provided links to this information), and two said they publish this in hard copy, which they were requested to send to the IPPC Sea Container Task Force.

Summary and concluding remarks

[60] This section starts with several comments left by responding NPPOs after completing the questionnaire:

- "We appreciated the survey, and we will be happy to receive the summary of this interview from you. Given the relevance of this topic, we are seeking material and financial support for capacity building of our officers on maritime container issues."
- "We appreciate you for the questionnaire, however, there are challenges faced by [our] NPPO in carrying out sea container inspection such as 1. Inadequate personnel 2. Poor facility and equipment. We need support for capacity development on sea container inspections."
- "Dear Colleagues of the IPPC, if you have noticed that I have not continued the questionnaire, it is because my country [...] has no seaport. All inspections are done at land borders and at the airport. Thanks for taking it into account."
- "The [... sea containers task force] has aroused the attention of [our] NPPO agents, because previously we had no idea that the containers are large pest disseminators, so my team and I

[12] Some countries that agreed to sharing data said that due to privacy legislation they would not be able to share all information in their databases, or that authorisation first needed to be received. At the time of finalising this report (November 2019), only one country had shared data, while four more said they would in 2020. One country responded to the non-response emails to say that there were data collected by a port authority in the country. This country was requested to share these data. A list of these countries is available in the data files Dropbox folder.

support the marine container team and [hope] their work lead to the development of a useful standard."

- "Special attention should be paid to cleaning and treatment of containers inside and outside, in particular soil and mollusks [...]."
- "[Our] country does not deal with sea containers" (landlocked country).
- "See container inspection is new topic to [our country]" (landlocked country).
- "Measures to inspect sea containers carrying non-regulated goods will also serve as another barrier to affect trade of developing countries."
- "[Our NPPO] is pleased to be given a chance to provide details on Sea Container Hygiene and encourages a similar procedure for airline containers as well. We will be happy to discuss further details in this regards. "
- "Container transport is a common transport system in the world.There is a risk of containers carrying harmful organisms between countries. The IPPC's work on this issue is positive."
- "The programme on sea containers is not quite organised within the NPPO although we have phytosanitary inspectors at the seaport doing inspection and certification. We require capacity building in this area."
- "I am happy with the questionnaires which will make it possible to understand if the circulation of containers poses a phytosanitary problem. [We are] an landlocked country that is not interested in maritime transport issues."
- "This is a serious pathway for the introduction and spread of invasive pests and phytosanitary measures must be put in place to mitigate the risks"

[61] The questionnaire was designed and implemented with the following objectives:

- to assess NPPOs' current level of monitoring of sea containers
- to assess NPPOs' implementation of existing industry guidelines for container cleanliness
- to assess what type of data about container cleanliness was currently collected
- to request NPPOs to share the collected data with the SCTF

[62] Due to the low rate of response – only 36% of all Contracting Parties provided full or partial response – its results have to be interpreted with care, as the outcomes are unlikely to reflect the opinions and activities of all NPPOs.

[63] The main results are summarised in Table 2. Almost all responding NPPOs perceive containers and their cargo as a risk, but for around a quarter (18 out of 68 countries) this is only the case when the containers are carrying regulated articles.

[64] Close to half of all responding NPPOs (32 out of 68 countries) said they have regulations in place that allow them to deal with the risk of sea containers and their cargo. In all likelihood this is an underestimate as some countries seem to have misunderstood the question as only referring to having regulations specifically relating to containers, rather than any regulations that allow them to inspect containers and act upon found pests.

[65] Of the 66 NPPOs that responded to this question 54 said they inspect containers and their cargo, mostly in targeted inspections (n=32), but also as part of inspections not directly targeting containers (n=22). Most commonly NPPOs that inspect containers do so following official national procedures or guidelines (30 of the 46 countries that inspected containers). Existing industry guidelines such as the CTU Code and the Joint Industry Container Cleanliness Guidelines were each mentioned by only one respondent.

[66] Measures were taken or authorised if risks on imported containers or their cargo were found said 51 of the 62 countries that answered this question, while 43 NPPOs said to do the same with ready-to-export containers. Of the eight countries that said not to take measures, some indicated they saw no risk, and one country indicated there was no provision for this within their legislation.

[67] Pests, organisms or other contamination were encountered by almost three quarters of the NPPOs that answered this question (46 out of 61 countries that answered this question). The remaining 16 NPPOs said they had not encountered anything or did not inspect containers. All but four of the 43 countries that had found pests on containers said these included quarantine (32 countries) and non-quarantine pests (35 countries), and 28 NPPOs indicated both.

[68] Of the 58 NPPOs that responded to this question, 36 said they did not have an information management system in which information about containers and their cargo was stored. Those countries with a system most commonly enter data about presence of pests (n=18) and the type of contamination (n=17). Contamination location is also entered by more than half the countries with a system (n=14), but the level of contamination (e.g., high/low) is less commonly stored (n=9), and only a minority (n=5) store information about absence of contamination, indicating that structural data keeping necessary to determine the proportion of containers that harbour pests is uncommon.

[69] Most countries with an information management system said they were willing to share this information with the SCTF and were asked to do so (17 countries).

Table 2 Main results

Questions	# countries
Are containers and their cargo seen as a risk for spreading pests?	**68**
Yes, regardless of the type of cargo	47
Yes, but only if carrying regulated articles	18
No	3
Are regulations in place to deal with the risk of containers and cargo?	**68**
Yes	32
Future plans	15
No	21
Are there inspections of containers and cargo?	**66**
Yes, focussed specifically on containers and their cargo	32
Yes, but not as separate inspections focussed on containers	22
No	17
Are measures taken if risks on containers and cargo are discovered?	**62**
Yes, on imported containers	51
Yes, on ready-to-export containers	43
No	8
Are pests, other organisms or contamination found on containers and cargo?	**61**
Yes, including quarantine pests	32
Yes, including non-quarantine pests	35
No, not found or containers and cargo not inspected	16
Is there an information management system for container-related information?	**58**
No	36
Yes (to varying degrees)	22

Annex 1 List of participating countries

Table 3 List of participating countries by region

Africa	Africa (cntd)	Europe (cntd)	Near East
Algeria	Sao Tome and Principe	Greece	Oman
Botswana	Senegal	Italy	Turkey
Côte d'Ivoire	Sierra Leone	Latvia	Yemen
Chad	**Asia**	Lithuania	**North America**
Comoros	Cambodia[1]	Malta	Canada
Congo	China	Portugal	United States of America
Congo (Dem. Rep.)	Japan	Russian Federation	**Soutwest Pacific**
Eritrea	Kyrgyzstan	Slovenia	Australia
Gambia	Myanmar	Ukraine	Fiji
Ghana	Nepal	**Latin America & Carribean**	Kiribati[2]
Guinea-Bissau	Pakistan	Costa Rica	New Caledonia[3]
Liberia	Philippines	Cuba	New Zealand
Libya	Thailand	Dominican Republic	Niue
Madagascar	**Europe**	El Salvador	Samoa
Malawi	Azerbaijan	Guatemala	Tonga
Mali	Denmark	Nicaragua	Tuvalu
Namibia	Estonia	Peru	Vanuatu
Niger	Georgia	Venezuela (Bol. Rep.)	
Nigeria	Germany		

Notes: [1] Answers only included up to question 6; [2] IPPC information point; [3] IPPC local contact

Annex 2 English questionnaire

Questionnaire on Monitoring of Sea Container Cleanliness

Monitoring of Sea Container Cleanliness

Plant pests including contaminating pests, are moved around the globe in and on the agricultural and forestry products we trade. They may also be transported on and in the millions of rail wagons, trailers and sea containers that traverse our oceans and continents on trains, trucks and ships. Once introduced, such pests are very difficult and expensive to control or eradicate. They can severely damage agricultural production, affect property values, and reduce water availability and quality. The total cost of lost revenue and clean-up can run into billions of dollars.

The Commission on Phytosanitary Measures (CPM) has adopted a CPM Recommendation (R-06) on Sea containers, the purpose of which is to protect agriculture, forestry and natural resources against pests transported by sea containers. This Recommendation helps promote sea container cleanliness and it complements the IMO/ILO/ UNECE Code of Practice for Packing of Cargo Transport Units (CTU Code). Everyone involved in packing and moving containers has an opportunity to protect our crops and forests by ensuring that containers and their cargo are free from pests such as unwanted plants, insects, snails and soil. The International Phytosanitary Portal (IPP) page on Sea Containers provides more information on this initiative.

The Sea Containers Task Force (SCTF), a Sub-group of the Implementation and Capacity Development Committee (IC), supervises the actions contained in the Sea Containers Complementary Action Plan for Assessing and Managing the Pest Threats Associated with Sea Containers, endorsed by CPM12, under the oversight of the IC.

The SCTF has proposed a number of actions to monitor the uptake and efficiency of the CTU Code. The Task Force concluded that monitoring by NPPOs to gauge the uptake and effect of the CTU Code adoption over time is necessary in addition to obtaining industry cleaning data. The questionnaire below is intended to ascertain which NPPOs can provide such data and/or which are currently undertaking such monitoring. Your responses on the questionnaire are highly appreciated.

If you have any questions regarding this questionnaire, please contact XX. While entering this questionnaire you must have an active internet connection. However, you can pause and continue the questionnaire later without losing your data. For this please use the original web-link.

1. Does your National Plant Protection Organization (NPPO) consider sea (shipping) containers and their cargo to be a potential pathway for the introduction of plant pests into your country, thereby forming a phytosanitary and/or a biosecurity risk*?	Yes, but only if carrying regulated articles that are themselves considered a risk.....1 Yes, regardless of the type of cargo.....2 No (please explain why not).....0 *Phytosanitary risk: According to ISPM 5 (Glossary of phytosanitary terms) a pest risk for quarantine pests is the probability of introduction and spread of a pest and the magnitude of the associated potential economic consequences [ISPM 2, 2007] Phytosanitary risk is concerned with endangered areas: An area where ecological factors favour the establishment of a pest whose presence in the area will result in economically important loss [ISPM 2, 1995] *Biosecurity risk: According to FAO it is all relevant risks to human, animal and plant life and health, and associated risks to the environment.
In the remainder of this questionnaire when we refer to cargo, we mean cargo in general, not regulated articles that are themselves considered a risk. Cargo in general is included in the questionnaire, as pests can be introduced to containers via non-regulated articles if those carry pests, soil, plant debris, egg sacs, etc. themselves.	
2. Do your phytosanitary and or biosecurity regulations include regulations to deal with the risks associated with sea (shipping) containers and their cargo[13]?	Yes.....1 Not yet, but there is a future regulatory plan....2 **>>Q5** No (please explain).....0 **>>Q5**
3. Could you please provide us with either soft copies, hard copies or internet links to the regulations that relate to sea (shipping) containers and their cargo? Links can be entered here. Soft copies can be sent to XXX. Hard copies can be sent to XXX. There will be a reminder with these contact details at the end of this questionnaire.	_____ _____ _____
4. Which are the authorized bodies/agencies responsible for implementation of these regulations? Please mention all, if there are more than one.	_____ _____ _____
5. Does your NPPO, alone or together with other agencies such as Customs, undertake or authorise inspections of empty and/or packed sea (shipping) containers and their cargo[14]? Please select all answers that apply.	Yes, there are inspections focussed specifically on containers and their cargo.....1 Yes, but not as separate inspections specifically focussed on containers and their cargo.....2 No (please explain).....0 **>>Q10**

[13] We mean any regulations that allow you to deal with risks associated with sea (shipping) containers and their cargo in general (not only cargo of regulated articles).

[14] By cargo we mean cargo in general, not cargo of regulated articles that is itself associated with pest risks. If inspections ONLY occur on containers carrying regulated articles, please answer "No" and explain this in the space provided.

6. Do these inspections cover empty and/or packed containers? If both, please select both answers.	Empty containers.....1 Packed containers.....2
7. Does your NPPO follow an official written documented procedure for such inspections, or does it use procedures or guidelines from other national or international organizations dealing with container movements? **PLEASE SELECT ALL THAT APPLY**	National official guidelines.....1 Joint Industry Container Cleanliness Guidelines.....2 CTU Code.....3 Container Owners/operators or shipper, guidelines....4 IPPC guidelines on sea container surveys.....5 Others, please specify.....99 No written procedures or guidelines are followed.....0 CTU Code: 2014 IMO/**ILO**/**UNECE** Code of Practice for Packing of Cargo Transport Units
8. Where are these inspections usually performed for containers that are IMPORTED into your country? If more than one location is commonly used, please select all that apply.	Container depot or unpacking location in your country.....1 Port of unloading in your country .....2 Port of loading or transshipment port in country of export/intermediate country. .....3 Container depot or packing location in country of export..4 Other, please specify.....99
9. Where are inspections usually performed for READY-TO-EXPORT containers? If ready-to export containers are not inspected, please choose that answer option. If more than one location is commonly used, please select all that apply.	Container depot or packing location in your country.....1 Port of loading in your country .....2 Ready-to-export containers are usually not inspected.....0 Other, please specify.....99
10. Does your NPPO apply or authorize phytosanitary and/or biosecurity measures if phytosanitary and/or biosecurity risks have been identified on imported or ready-to-export sea containers (packed and/or empty)? Please select all answers that apply.	Yes, on imported containers.....1 Yes, on ready-to-export containers.....2 No (please explain).....0 **>Q13**
ONLY ASK IF Q1110 INCLUDES 1 11. Which measures are taken if phytosanitary and/or biosecurity risks have been identified on IMPORTED containers? Please select all answers that apply.	Rejection of the containers (EMPTY or PACKED).....1 Clean and/or treat EMPTY containers.....2 Unpack, clean and/or treat, and repack PACKED containers.....3 Clean and/or treat PACKED containers without unpacking.....4 Others (please specify).....99
ONLY ASK IF Q1110 INCLUDES 2 12. Which measures are taken if phytosanitary and /or biosecurity risks have been identified on READY-TO-EXPORT containers? Please select all answers that apply.	Clean and/or treat EMPTY containers.....2 Unpack, clean and/or treat, and repack PACKED containers.....3 Clean and/or treat PACKED containers without unpacking.....4 Others (please specify).....99

13. What are the main pests, organisms or contaminants found by your NPPO on/in sea (shipping) containers and their cargo[15]? If none are found, or containers are not inspected, please select that option. **PLEASE SELECT ANSWERS ALL THAT APPLY**	Soil.....1 Plants/plant products/plant debris.....2 Seeds .....3 Moths, Wasps, Bees .....4 Snails, Slugs, Ants, Spiders.....5 Mould and Fungi.....6 Frass (insect droppings or waste).....7 Egg sacs.....8 Animals, animal parts/ blood/excreta and reproductive components or parts thereof.....9 Other insects (including beetles, flies, etc.).....10 Other contamination that shows visible signs of harbouring pests (please specify).....99 No contamination found/containers not inspected....0			
14. Do the option(s) selected in the previous question include quarantine and/or non-quarantine pests? If both, please select both answer options.	Includes quarantine pests.....1 Includes non-quarantine pests....2 No.....0 **>>Q17**			
ONLY ASK IF Q14 INCLUDES 1 15. Please indicate the Latin names of the main quarantine pests that have been intercepted during sea container inspections?[16] For each quarantine pest mentioned, please indicate whether they are found dead, alive, or both.	_____ _____ _____	Dead ...1 ...1 ...1	Alive ....2 ....2 2	Both ....3 ....3 3
ONLY ASK IF Q14 INCLUDES 2 16. Please indicate the Latin names of the main non-quarantine pests that have been intercepted during sea container inspections?[17] Please indicate for each non-quarantine pest mentioned whether they are found dead, alive, or both.	_____ _____ _____	Dead ...1 ...1 ...1	Alive ....2 ....2 2	Both ....3 ....3 3
17. What does your NPPO do if non-plant pests are identified (i.e., pests that pose a potential risk to human, livestock or wildlife health)?	Our NPPO is also responsible for non-plant pests....1 Contact the relevant national agency responsible for the type of pest found.....2 Do nothing.....3 Other, please describe.....99			
18. Does your NPPO have or have access to an information management system in which absence or presence of pests, organisms or other contaminants found on or in sea (shipping) containers and their cargo[18] are recorded and kept? If yes, what type of information is recorded? Please select all answers that apply.	No.....0 **>>END** Presence of contamination.....1 Contamination level (e.g., high/low).....2 Contamination location (e.g., on cargo, internal/external).3 Contamination type (e.g., soil, dead/live insects).....4 Absence of contamination.....5 Other types of information (please specify).....99			
19. Would your NPPO be prepared and able to share the data from the information system with the IPPC Sea Containers Task Force?	Yes.....1 No (please explain)...2			

[15] By cargo we mean cargo in general, not cargo of regulated articles that is itself associated with pest risks.

[16] The purpose of collecting this information is to create a list of pests associated with sea containers so that relevant pest risk management recommendations can be provided.

[17] The purpose of collecting this information is to create a list of pests associated with sea containers so that relevant pest risk management recommendations can be provided.

[18] By cargo we mean cargo in general, not cargo of regulated articles that is itself associated with pest risks.

	ONLY LOAD TEXT MESSAGE IF Q19=1 Please send the data, going back no further than January 2016 to XXX. There will be a reminder with these contact details at the end of this questionnaire.	
	20. Does your NPPO **publish** information on sea container cleanliness, phytosanitary and/or biosecurity risks found on and in sea (shipping) containers and their cargo[19] (for example, information on the types of pests found or the proportion of clean containers)? Please select all answers that apply.	Yes, in hard copy.....1 Yes, on the internet.....2 No.....0 **>>END**
	21. Could you please provide us with **either** hard copies or links to this published information? Links can be entered here. Hard copies can be sent to XXX. There will be a reminder with these contact details on the final screen.	_____ _____ _____

LIST OF INFORMATION TO SHARE WILL BE BASED ON ANSWERS GIVEN IN RELEVANT QUESTIONS

Thank you for participating in this questionnaire! We would appreciate if you could send us:

- Soft or hard copies of the regulations within your regulatory framework that relate to sea (shipping) containers and their cargo. Alternatively, if these regulations are available online, you could also enter their links in **Question 3**.
- Data from the information management system used by your NPPO that relates to sea containers and their cargo, going back no further than January 2016.
- Hard copies of the information your NPPO published about pests and/or other contamination found on or in sea containers and their cargo. Alternatively, you could enter links to this published information by going back to **Question 21.**

Soft copies or data can be sent to XX. Hard copies can be sent to XXX. If you have any questions regarding this questionnaire or about other ways to share this information with the IPPC Sea Containers Task Force, please contact XX.

The analysis of this survey will be reported and shared with NPPOs through the IPPC SCTF and published on the Sea Container website https://www.ippc.int/en/core-activities/capacity-development/sea-containers/. The final report will be available at the end of October 2019.

[19] Meant here is cargo in general, not cargo of regulated articles that is itself associated with pest risks.

Annex 3 Full list of quarantine pests with indication whether found dead, alive, or both

If NPPOs indicated they had encountered quarantine pests on containers and their cargo, they were asked to provide the Latin names of the most common ones found (22 countries did this). Instead of Latin names, some respondents entered common names, which are included at the bottom of . For each entered quarantine pest, respondents were asked to indicate the pests' status as found: dead, alive, or both dead and alive (21 countries entered this information). Sometimes respondents indicated the status for several pests simultaneously; these have been set to missing ('na') in .

Table 4 List of quarantine pests	# countries	Status as found[20]
Acanthocinus eadilis	1	alive
Achatina fulica	1	alive & dead
Acusta despecta	1	alive & dead
Alphitobius diaperinus	1	alive & dead
Ambrosia artemisiifolia L.	1	alive
Anoplophora glabripennis	1	na
Aphelenchoides besseyi	1	alive
Apis mellifera	1	alive & dead
Arhopalus ferus	2	alive; alive & dead
Aspergillus spp.	1	alive & dead
Bactrocera dorsalis	1	alive
Bemisia tabaci	1	na
Bursaphelenchus cocophilus	1	na
Candidula unifasciata (Poiret) (Geomitridae)	1	alive
Cerambycidae	1	na
Ceratitis cosyra	1	alive
Cernuella sp. (Geomitridae)	1	alive
Cernuella virgata (da Costa) (Geomitridae)	1	alive
Dermestidae (others)	1	alive & dead
Dermestidae Dermestes sp.	1	na
Franklinella occidentalis	1	alive
Fusarium oxysporum f. sp. cubense	1	alive
Gastropoda	1	alive & dead
Globodera rostochiensis	1	na
Grapholita molesta	1	dead
Halyomorpha halys	2	alive & dead
Harmonia axyridis	1	alive & dead
Helicella sp. (Geomitridae)	2	alive
Helicella virgata da Costa (Geomitridae)	1	alive
Imperata cylindrica (L.) Raeusch. (Poaceae)	1	alive
Lacertilia	1	na
Lipocelis sp.	1	alive & dead
Lissachetina fulica	1	alive & dead
Lymantria dispar	1	alive & dead
Massylaea vermiculata	1	alive & dead
Megacopta cribraria	1	alive & dead
Monacha cartusiana (Müller) (Hygromiidae)	1	alive
Monacha sp. (Hygromiidae)	1	alive
Monochamus spp.	3	alive; alive & dead
Mus musculus	1	na
Mycosphaerella fijiensis	1	alive
Phytophthora infestans	1	alive

[20] na: answer not provided, or overall answer provided for several species simultaneously.

Polygyra cereolus	1	alive & dead
Pomacea canaliculata	1	alive & dead
Prietocella barbara (Linné) (Geomitridae)	1	alive
Puccinia sp.	1	na
Ralstonia solanacearum	1	alive
Saccharum sp. (Poaceae)	1	alive
Saccharum spontaneum Linnaeus (Poaceae)	1	alive
Schinus tenebinthitolius	1	alive
Sinoxylon anale	1	alive & dead
Sinoxylon conigerum Gerstäcker	1	alive
Spodoptera frugiperda	2	alive; na
Stegobium paniceum	1	alive & dead
Theba pisana (O.F. Müller) (Helicidae)	1	alive
Tilletia sp.	1	na
Tribolium sp.	1	na
Tridax procumbens Linnaeus (Asteraceae)	1	na
Trogoderma granarium	2	alive & dead
Trogoderma spp.	3	alive & dead
Trogoderma variabile	1	alive & dead
Xanthomonas axonopodis pv. manihotis	1	alive
Xanthomonas campestris pv. musaceaum (BXW)	1	na
Xerotricha conspurcata (Draparnaud) (Geomitridae)	1	alive
Quarantine pests (English name)	**# countries**	**Status as found**
African cassava mosaïc begomovirus	1	alive
ants	1	na
aphids	1	na
Cassava brown streak virus disease	1	na
Diseases through moulds, decay grains	1	alive & dead
gekko	1	na
Grain moths	1	na
Maize lethal necrosis disease	1	na
Mealybug	1	na
Rodents	1	alive & dead
Slugs	1	na
Snails	2	na
Spiders	1	na
Wasps	1	na
weevils	1	na

Annex 4 Full list of non-quarantine pests with indication whether found dead, alive, or both

If NPPOs indicated they had encountered non-quarantine pests on containers and their cargo, they were asked to provide the Latin names of the most common ones found. Instead of Latin names, some respondents entered common names, which are included at the bottom of . For each entered non-quarantine pest, respondents were asked to indicate the pests' status as found: dead, alive, or both dead and alive. Sometimes respondents indicated the status for several pests simultaneously; these have been set to missing ('na') in . The three pests marked by an asterisk at the end of the list of Latin names are not considered 'quarantine' pests in the respondent's country who listed them, but as indicated by the respondent, they may however be regulated for other reasons including the potential to vector quarantine pests or diseases of biosecurity concern to animal or human health or due to their predatory nature.

Table 5 List of non-quarantine pests	# countries	Status as found[21]
Acanthoscelides obtectus	1	alive & dead
Achaearanea tepidariorum	1	alive & dead
Acheta domesticus	1	alive
Agropes spp.	1	alive & dead
Alternaria sp.	2	alive;na
Alternaria tenuis	1	na
Amaranthus sp	1	alive
Antrenus sp.	1	na
Aphelenchoides	1	alive & dead
Apocrita	1	na
Araneae	1	alive & dead
Arhopalus minutus	1	alive & dead
Aspergillus sp.	1	alive
Asteraceae spp.	1	alive
Attagenus spp.	1	alive & dead
Avena	1	na
Bethylidae	1	alive & dead
Blattella germanica	1	alive & dead
Blattodea	1	alive & dead
Bostrichids	1	alive & dead
Bradybaena similaris (Rang) (Camaenidae)	2	alive; alive & dead
Bulimulus sp. (Bulimulidae)	1	alive
Calcisuccinea luteola (Gould) (Succineidae)	1	alive
Callosobruchus chinenses	1	alive & dead
Callosobruchus maculatus	1	alive & dead
Calosoma olivieri	1	alive
Carphohilus obsoletus	1	alive & dead
Cerambycidae	2	alive & dead; na
Chenopodium album	1	alive
Cornu aspersum (O.F. Müller) (Helicidae)	1	alive
Crossopriza lyoni	1	alive & dead
Cryptolestes ferrugineus	1	alive & dead
Cryptolestes spp.	1	alive & dead
Cryptrugus	1	alive & dead
Cucujidae	1	alive & dead
Curculionids	1	alive & dead
Dinoderus minutus	1	alive & dead
Echinochloa sp.	1	alive

[21] na: answer not provided, or overall answer provided for several species simultaneously.

Eobania vermiculata (Müller) (Helicidae)	1	alive
Ephestia elutella	1	alive & dead
Ephestia kuehniella	1	alive & dead
Ephestia spp.	1	alive & dead
Epureae spp.	1	alive
Forfucilidae sp.	1	na
Fusarium sp.	2	alive; na
Halyomorpha halys	2	alive; na
Hemidactylus frenatus	1	alive & dead
Iridomyrmex	1	alive & dead
Isoptera	1	alive & dead
Lasioderma serricorne	3	alive & dead
Lasioderma spp.	1	dead
Latrodectus geometricus	1	alive & dead
Lipocelis sp.	1	alive & dead
Melinis repens (Willdenow) Zizka (Poaceae)	1	alive
Mollusidea spp.	1	alive
Monomorium Destructor	1	alive & dead
Monomorium Pharaonis	1	alive & dead
Musa domestica	1	alive & dead
Oryza sativa (red rice)	1	alive
Oryzaephilus surinamensis	2	alive & dead; na
penicillium sp	1	alive
Periplanata americana	1	alive & dead
Pheidole Megacephala	1	na
Pholcus Phalangioides	1	alive & dead
Phragmites australis (Cavanilles) Trinius ex Steudel (Poaceae)	1	alive
Phragmites sp. (Poaceae)	1	alive
Plodia interpunctella	1	alive & dead
Poaceae spp.	1	alive
Psocoptera spp.	1	alive
Rhizopertha dominica	4	alive & dead
Rhizophilus surinamensis	1	na
Rhizopus sp.	1	alive
Sinoxylon anale	1	alive & dead
Sitophilus granarium	2	alive & dead
Sitophilus orizae	3	alive & dead
Sitophilus zeamais	2	alive & dead
Sitophylus spp	1	alive & dead
Sitotroga cerealella	2	alive & dead
Solenopsis	1	alive & dead
Succinea sp. (Succineidae)	1	alive
Tetramorium Bicarinatum	1	alive & dead
Tetranichus sp.	1	na
Theba Pisana	1	alive & dead
Tribolium castaneum	4	alive & dead; na
Tribolium confusum	2	alive & dead
Tribolium madens	1	alive & dead
Tribolium spp.	2	alive & dead
Triticum aestivum Linnaeus (Poaceae)	1	alive
Triticum sp. (Poaceae)	1	alive
Typha sp. (Typhaceae)	1	alive
Zea mays Linnaeus (Poaceae)	1	alive
*Apis mellifera**	1	alive & dead

*Culex quinquefasciatus**	1	alive & dead
*Steatoda triangulosa**	1	alive & dead
Non-quarantine pests (English name)	**# countries**	**Status**
ants (not identified)	1	na
Beetles	1	alive & dead
Moths	1	alive & dead
Spiders	1	alive & dead
Termites	1	na
White fungus (le mycélium blanc)	1	na