2019 FIRST CONSULTATION

1 July – 30 September 2019

Compiled comments for Draft annex to ISPM 27: Diagnostic protocol for *Striga* spp. (2008-009)

Summary of comments

Name	Summary
Cuba	No tenemos comentarios al Protocolo.
European Union	Comments submitted by the European Commission on behalf of the European Union and its 28 Member States.
South Africa	The National Plant Protection Organisation of South Africa (NPPOZA) has no comments and therefore accepts this standard.

T (Type) - B = Bullet, C = Comment, P = Proposed Change, R = Rating

FAO sequential number	Para	Text	T	Comment	SC's response
1	G	(General Comment)	C	**Guyana** Guyana endorses this document and therefore has no objections with it moving forward. *Category : SUBSTANTIVE*	
2	G	(General Comment)	C	**Mexico** I support the document as it is and I have no comments *Category : SUBSTANTIVE*	
3	G	(General Comment)	C	**Ecuador** Striga es un género de plantas perteneciente a la familia Scrophulariaceae. Ahora clasificada dentro de la familia Orobanchaceae. Son plantas parasíticas de raíz, las semillas de la maleza germinan en respuesta a los exudados de raíz del huésped, se parasita mediante las extructuras especializada llamada haustorio; por el cual pasan los nutrientes y el agua de la planta huésped. Striga ataca algunas familias de las poaceas como: maíz, pasto, arroz, sorgo entre otros; provocando pérdidas importantes en los cultivos. En cuanto a Ecuador Striga no se ha reportado ningún caso de esta maleza por lo que es una Plaga Cuarentenaria Ausente. *Category : TECHNICAL*	
4	G	(General Comment)	C	**Peru** Perú ratifica los comentarios y sugerencias concordados a nivel del COSAVE.	

				Category : SUBSTANTIVE	
5	G	(General Comment)	C	**Russian Federation** The Russian Federation would like to formally endorse the EPPO comments submitted via the IPPC Online Comment System. *Category : SUBSTANTIVE*	
6	G	(General Comment)	C	**European Union** **A** The current diagnostic protocol covers diagnostic identification of seeds of three Striga species - Striga asiatica, S. gesnerioides, S. hermontica. It is recommended to add to the diagnostic protocol information on other Striga species that can pose a potential threat in case of importation of commodities from countries where these dangerous weeds are present. **B** Further, it is recommended to add to the diagnostic protocol information on the morphology of Striga fruits, considering that they can also be present in commodities and be used for diagnostic identification. **C** The document should be clarified and English improved. *Category : SUBSTANTIVE*	**Comment A- Considered but not incorporated** Including all the ~40 species of *Striga* is beyond the scope and utility of this document **Comment B - Incorporated** There is an image of a capsule **Comment C - Incorporated** The authors have addressed comments for clarification and the IPPC Secretariat scientific editor improved the English
7	G	(General Comment)	C	**Argentina** Simplify the description of the sampling procedure described in section 3.1 by including the sample size required for Striga spp. detection, so that it is clearly specified just like the DP19 Sorghum halepense. *Category : SUBSTANTIVE*	**Modified** Section 3 has been heavily edited and text moved around as per country comments. The text has been simplified as 1kg for large seeded seeds or grains, and 500g for small seeded seeds or grains such as *Panicum* spp.
8	G	(General Comment)	C	**Slovenia** Slovenia would like to formally endorse the EPPO comments submitted via the IPPC Online Comment System. *Category : TECHNICAL*	
9	G	(General Comment)	C	**Bahrain** no comment *Category : TECHNICAL*	
10	G	(General Comment)	C	**Cuba** No tenemos comentarios al Protocolo. *Category : TECHNICAL*	

11	G	(General Comment)	C	**EPPO** The document should be clarified and English improved. *Category : SUBSTANTIVE*	
12	G	(General Comment)	C	**EPPO** **A** All species of Striga genus are included in the EAEU Unified List of Quarantine Pests and pose a significant threat to agricultural crops grown in the Russian Federation – maize, wheat, rye, oat, rice, sorghum, millet. **B** The current diagnostic protocol covers diagnostic identification of seeds of three Striga species - Striga asiatica, S. gesnerioides, S. hermontica. It is recommended to add to the diagnostic protocol information on other Striga species that can pose a potential threat in case of importation of commodities from countries where these dangerous weeds are present. **C** Further, it is recommended to add to the diagnostic protocol information on the morphology of Striga fruits, considering that they can also be present in commodities and be used for diagnostic identification. *Category : SUBSTANTIVE*	**Comment A- Considered but not incorporated** Including all the ~40 species of *Striga* is beyond the scope and utility of this document **Comment B - Considered but not incorporated** Including the additional species is beyond scope **Comment C- Incorporated** There is an image of a capsule
13	G	(General Comment)	C	**Australia** Para 99 and the 4th column of table 1 (surface texture) could probably be better explained to help diagnose Striga spp. For example, para 99 says "the seed surface of Orabanche and Phelipanche is deeply honeycombed and lacks the spiral ornamental ridges of Striga". However the term 'honeycomb' is again used to describe the surface texture of Striga spp. with no further explanation on the level of honeycomb structures (para 117, 123). In para 117 the use of word 'smooth' is also not clear when ridges appear in the picture. *Category : TECHNICAL*	**Modified** Details and a reference have been added. More descriptive text has been added to para 117 and 123.
14	G	(General Comment)	C	**Australia** In the Acknowledgements section Barbara Waterhouse 'affiliation' should probably be attributed as "Department of Agriculture, Cairns, Australia" (instead of the NAQS attribution) and Gregory Chandler's should also be changed to "Department of Agriculture, Sydney, Australia" (rather than Department of Agriculture and Water Resources). *Category : EDITORIAL*	**Incorporated**
15	G	(General Comment)	C	**United States of America** The exact scope of the document is not clear: is it to discriminate the entire Striga genus from other plant genera or is it to discriminate the three species of Striga (S.	**Considered but not incorporated** The protocol deals with the genus *Striga* for inspectors, it is not a botany paper

				asiatica, S. gesnerioides, and S. hermonthica) from other Striga species. If the purpose is to discriminate the Striga genus from other plant genera, we suggest to focus more on the genus level characteristics (that could be used to separate this genus from others). If the purpose is to be able to separate these three species from all other Striga species that they may commonly be confused with, then more information has to be added to be able to do so. *Category : SUBSTANTIVE*	
16	G	(General Comment)	C	**Uruguay** The description of the sampling procedure described in section 3.1 should be simplified by including the sample size required for detection of Striga spp., so that it is clearly specified just like the DP19 of Sorghum halepense. *Category : TECHNICAL*	**Modified** Section 3 has been heavily edited and text moved around as per country comments. The text has been simplified as 1kg for large seeded seeds or grains, and 500g for small seeded seeds or grains such as *Panicum* spp.
17	G	(General Comment)	C	**Barbados** This draft annex is comprehensive Barbados has no changes to make. *Category : EDITORIAL*	
18	G	(General Comment)	C	**Guinea-Bissau** I agree *Category : TECHNICAL*	
19	G	(General Comment)	C	**Gambia** When the whole lot is less than 25◦000 seeds, the whole lot should be examined without sub-sampling procedures, provided that the sample weight is not significantly less than the minimum sample weight *Category : SUBSTANTIVE*	**Considered but not incorporated** This is the case when high value seeds are in a very small quantity for trade, the whole lot shall be tested. In this case, the dry method will be used to have the seeds to be used after the testing
20	G	(General Comment)	C	**Thailand** Morphological idenification of seed or plant are suitable for the identification of 3 species , including Striga asiatica, S. gesnerioides and S. hermonthica. However, this information is not enough for the identification of other species in genus Striga., which are quite similar to the aforesaid species, particularly, Striga hermonthica and Striga aspera. Although differences on the characteristic of corola bend between Striga hermonthica and Striga aspera is described in section 4.3.3, lots of expertise is required for the identification. So, molecular identification should be provided as an alternative methods in order to complete this protocol and to prevent the misidentification. *Category : SUBSTANTIVE*	**Considered but not incorporated** Information is already provided in paragraph 96 of the draft protocol.

21	G	(General Comment)	C	**China** According to this standard, the seeds and plants of three damaging Striga species can be identified, but the details should be added to make it more complete. *Category : TECHNICAL*	**Considered but not incorporated** Including all the ~40 species of *Striga* is beyond the scope and utility of this document
22	G	(General Comment)	C	**Malawi** Malawi supports the Draft Annex to ISPM 27: Striga spp. (2008-009) *Category : SUBSTANTIVE*	
23	G	(General Comment)	C	**Malawi** Malawi supports the Draft Annex to ISPM 27: Striga spp. (2008-009) *Category : SUBSTANTIVE*	
24	G	(General Comment)	C	**Botswana** we are adopting the diagnostic protocol *Category : TECHNICAL*	
25	G	(General Comment)	C	**New Zealand** New Zealand supports the protocol. *Category : SUBSTANTIVE*	
26	G	(General Comment)	C	**COSAVE** Simplificar la descripción del procedimiento de muestreo descripta en la sección 3.1 incluyendo el tamaño de muestra requerido para la detección de Striga spp., de modo que se especifique claramente al igual que el DP19 de Sorghum halepense. Simplify the description of the sampling procedure described in section 3.1 by including the sample size required for Striga spp. detection, so that it is clearly specified just like the DP19 Sorghum halepense. *Category : SUBSTANTIVE*	**Modified** See answer to comment 7
1. Pest Information					
27	50	The genus *Striga* Lour. (witchweeds) comprises approximately 42 species of obligate root parasitic plants (Mohamed *et al*., 2001). *Striga* is mainly distributed in tropical and subtropical regions, and some species are major pests of agricultural crops in these regions. Crops parasitized by *Striga* exhibit reduced growth, with substantial yield ~~losses in severe cases of up to 85%~~losses, depending on the level of resistance and tolerance of the specific host genotype (Rodenburg *et al*., 2005). Symptoms of parasitism include yield suppression or reduction,	P	**Japan** Delete "in severe cases of up to 85%". There are various ways of taking data on yield losses (e.g. sample size of fields are different case by case), so the figures vary depending on the situation. The specific figure may induce misleading, which should be avoided. Actually, various figures are described even when looking at the cited reference, i.e. Rodenburg et al.(2005). (For reference) Yield losses due to Striga infection of cereals in West Africa average 24% (10–31%), but in areas of heavy infestation losses reach 90–100% in some years.(Mohamed et al., 2001)	**Incorporated**

		stunted growth, and a drought-like appearance of the leaves.		*Category : SUBSTANTIVE*	
28	50	The genus *Striga* Lour. (witchweeds) comprises approximately 42 species of obligate root parasitic plants (Mohamed *et al*., 2001). *Striga* is mainly distributed in tropical and subtropical regions, and some species are major pests of agricultural crops in these regions. Crops parasitized by *Striga* exhibit reduced growth, with substantial yield losses in severe cases of up to 85%, depending on the level of resistance and tolerance of the specific host genotype (Rodenburg *et al*., 2005). Symptoms of parasitism include ~~yield suppression or reduction,~~ stunted growth, and a drought-like appearance of the leaves.	P	**European Union** **A** Yied suppression or reduction is not a symptom. This part should be deleted as effetcs on yield are already mentioned in the previous sentence. **B** The genus Striga Lour. (witchweeds) comprises approximately 60 species of obligate root parasitic plants (from the different literature sources). Ba AT (1984) Morphology, anatomy and ultrastructure of some parasitic species of the genus Striga (Scrophulariaceae) in: Striga biology and control (1984) https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/7701/63549.pdf?sequence=1 **C** It sould be worth stating the Striga are annual plants. **D** The reference provided for 42 species is Mohamed et al 2001. This reference is about Striga species in Africa and refers to 28 species and 6 subspecies is there a reference missing?. Ba AT (1984) in Striga biology and control (1984, E.S. AYENSU H. DOGGETT R.D. KEYNES J. MARTON-LEFEVRE L.J. MUSSELMAN C. PARKER A. PICKERING) states that According to several authors, this genus includes some 25 to 60 species, all species that have been examined are root parasites. As there is obviously some confusion in the number of species within the Genus (due probally to taxomonic uncertainty and multiple sub-species) a more general statement on the number of species could be appropriate. For example Plants of the World list 52 species: http://www.plantsoftheworldonline.org/taxon/urn:lsid:ipni.org:names:38035-1#source-KB. Whereas Spallek et al., (2013) detail 'approximaltly 30 species'. **E** The general pest information should specify that species within the Genus show different host preferences (ref: Runo & Kuria, 2018) Runo S, Kuria EK (2018) Habits of a highly successful cereal killer, Striga. PLoS Pathogens 14(1): e1006731. https://doi.org/10.1371/journal.ppat.1006731 *Category : TECHNICAL*	**Comment A - Incorporated** **Comment B - Considered not incorporated** The issue of number of species in the genus was addressed earlier (see comment 6a) **Comment C - Incorporated** **Comment D - Modified** I have added a new reference (Mohamed & Musselman, 2019) that can be the source for the number of species **Comment E - Considered not incorporated** Except S. *gesnerioides*, all species in the genus parasitize grasses
29	50	The genus *Striga* Lour. (witchweeds) comprises approximately 42 species of obligate root parasitic	C	**EPPO** Yied suppression or reduction is not a symptom. This part	**See answers to comment 28**

		plants (Mohamed *et al*., 2001). *Striga* is mainly distributed in tropical and subtropical regions, and some species are major pests of agricultural crops in these regions. Crops parasitized by *Striga* exhibit reduced growth, with substantial yield losses in severe cases of up to 85%, depending on the level of resistance and tolerance of the specific host genotype (Rodenburg *et al*., 2005). Symptoms of parasitism include yield suppression or reduction, stunted growth, and a drought-like appearance of the leaves.		should be deleted as effects on yield are already mentioned in the previous sentence. *Category : TECHNICAL*	
30	50	The genus *Striga* Lour. (witchweeds) comprises approximately 42 species of obligate root parasitic plants (Mohamed *et al*., 2001). *Striga* is mainly distributed in tropical and subtropical regions, and some species are major pests of agricultural crops in these regions. Crops parasitized by *Striga* exhibit reduced growth, with substantial yield losses in severe cases of up to 85%, depending on the level of resistance and tolerance of the specific host genotype (Rodenburg *et al*., 2005). Symptoms of parasitism include yield suppression or reduction, stunted growth, and a drought-like appearance of the leaves.	C	**EPPO** It sould be worth stating the Striga are annual plants. The reference provided for 42 species is Mohamed et al 2001. This reference is about Striga species in Africa and refers to 28 species and 6 subspecies is there a reference missing?. Ba AT (1984) in Striga biology and control (1984, E.S. AYENSU H. DOGGETT R.D. KEYNES J. MARTON-LEFEVRE L.J. MUSSELMAN C. PARKER A. PICKERING) states that According to several authors, this genus includes some 25 to 60 species, all species that have been examined are root parasites. As there is obviously some confusion in the number of species within the Genus (due probally to taxomonic uncertainty and multiple sub-species) a more general statement on the number of species could be appropriate. For example Plants of the World list 52 species: http://www.plantsoftheworldonline.org/taxon/urn:lsid:ipni.org:names:38035-1#source-KB. Whereas Spallek et al., (2013) detail 'approximaltly 30 species'. The general pest information should speciy that species within the Genus show different host preferences (ref: Runo & Kuria, 2018) Runo S, Kuria EK (2018) Habits of a highly successful cereal killer, Striga. PLoS Pathogens 14(1): e1006731. https://doi.org/10.1371/journal.ppat.1006731 *Category : TECHNICAL*	**See answers to comment 28**
31	50	The genus *Striga* Lour. (witchweeds) comprises approximately 42 species of obligate root parasitic plants (Mohamed *et al*., 2001). *Striga* is mainly distributed in tropical and subtropical regions, and	C	**EPPO** The genus Striga Lour. (witchweeds) comprises approximately 60 species of obligate root parasitic plants (from the different literature sources). Ba AT (1984) Morphology, anatomy and ultrastructure of some parasitic species of the genus Striga	**See answers to comment 28**

		some species are major pests of agricultural crops in these regions. Crops parasitized by *Striga* exhibit reduced growth, with substantial yield losses in severe cases of up to 85%, depending on the level of resistance and tolerance of the specific host genotype (Rodenburg *et al*., 2005). Symptoms of parasitism include yield suppression or reduction, stunted growth, and a drought-like appearance of the leaves.		(Scrophulariaceae) in: Striga biology and control (1984) https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/7701/63549.pdf?sequence=1 *Category : TECHNICAL*	
32	50	The genus *Striga* Lour. ~~(witchweeds)~~ comprises approximately 42 species of obligate root parasitic plants (Mohamed *et al*., 2001). *Striga* is mainly distributed in tropical and subtropical regions, and some species are major pests of agricultural crops in these regions. Crops parasitized by *Striga* exhibit reduced growth, with substantial yield losses in severe cases of up to 85%, depending on the level of resistance and tolerance of the specific host genotype (Rodenburg *et al*., 2005). Symptoms of parasitism include yield suppression or reduction, stunted growth, and a drought-like appearance of the leaves.	P	**China** This common name was mentioned in "2. Taxonomic Information" already. *Category : EDITORIAL*	**Considered but not incorporated** This is the first use of the term witchweed in the document
33	50	The genus *Striga* Lour. (witchweeds) comprises approximately 42 species of obligate root parasitic plants (Mohamed *et al*., 2001). *Striga* is mainly distributed in tropical and subtropical regions, and some species are major pests of agricultural crops in these regions. Crops parasitized by *Striga* exhibit reduced growth, with substantial yield losses in severe cases of up to 85%, depending on the level of resistance and tolerance of the specific host genotype (Rodenburg *et al*., 2005). Symptoms of parasitism include yield suppression or reduction, stunted growth, and a drought-like appearance of the leaves.	C	**China** The numbers of striga spp. needs further confirmation Recommended reference:http://www.theplantlist.org/ *Category : TECHNICAL*	**See answer to comment 28D**
34	50	The genus *Striga* Lour. (witchweeds) comprises approximately 42 species of obligate root parasitic plants (Mohamed *et al*., 2001). *Striga* is mainly	C	**Egypt** More recent publication claim that: The genus Striga	**See answer to comment 28D**

		distributed in tropical and subtropical regions, and some species are major pests of agricultural crops in these regions. Crops parasitized by *Striga* exhibit reduced growth, with substantial yield losses in severe cases of up to 85%, depending on the level of resistance and tolerance of the specific host genotype (Rodenburg *et al*., 2005). Symptoms of parasitism include yield suppression or reduction, stunted growth, and a drought-like appearance of the leaves.		comprises about 30 obligate root-parasitic plants (Spallek et al., 2013;) *Category : TECHNICAL*	
35	51	~~The greatest damage to crops is caused by three species: *Striga* *Striga* *asiatica*, *S. gesnerioides* and *S. hermonthica* (Mohamed *et al.*, 2001). *S. asiatica*~~ and *S. hermonthica* are among the most economically damaging weeds in the world. In Africa, these two pests attack grain crops and cereals, including *Zea mays* (maize), *Pennisetum* spp. (pearl millet), *Eleusine coracana* (finger millet), *Panicum* spp., *Eragostis tef* (teff) and *Sorghum bicolor* (sorghum), with some impacts on *Saccharum* spp. (sugarcane) and *Oryza sativa* (dryland rice), and can reduce the crop yield value by USD 7 billion every year (Ejeta, 2007; Csurhes *et al.*, 2016). *S. gesnerioides* is the only *Striga* species that attacks a dicotyledon host and usually infects Fabaceae, especially *Vigna unguiculata* (cowpea), Convolvulaceae, Euphorbiaceae and *Nicotiana tabacum* (tobacco, Solanaceae).	P	**Japan** Mohamed et al.(2001) indicated economical damages caused by Striga asiatica and S. hermonthica were bigger among Striga species and this information is already covered in the 2nd sentence. The greatest damage by S. gesnerioides is not justified in this reference. As there is no common criteria to clarify the size of "impact" and "damage", "the greatest damage to crops" may induce misleading. *Category : SUBSTANTIVE*	**Considered but not incorporated** Not understood what is wanted here. *Striga gesnerioides* causes serious losses to crops
36	51	The greatest damage to crops is caused by three species: *Striga asiatica*, *S. gesnerioides* and *S. hermonthica* (Mohamed *et al.*, 2001). *S. asiatica* and *S. hermonthica* are among the most economically damaging weeds in the world. In Africa, these two pests attack grain crops and cereals, including *Zea mays* (maize), *Pennisetum* spp. (pearl millet), *Eleusine coracana* (finger millet), *Panicum* spp., *Eragostis tef* (teff) and	P	**Japan** As described in this DP the 3 species covered by this DP, i.e. Striga asiatica, S. gesnerioides and S. hermonthica, among over 40 Stringa species, are economically important and are distributed in many parts of the world. However there are some other Stringa species which some countries and regions regulate as quarantine pests (EPPO Global Database, IPP), even though their distributed areas are limited comparing to these 3 species (CABI/CPC). We would like to propose that other Stinga species which member countries regulate as quarantine pests should be added as	**Considered but not incorporated** Opposed to including more *Striga* species. There are very few that cause economic damage.

		Sorghum bicolor (sorghum), with some impacts on *Saccharum* spp. (sugarcane) and *Oryza sativa* (dryland rice), and can reduce the crop yield value by USD 7 billion every year (Ejeta, 2007; Csurhes *et al.*, 2016). *S. gesnerioides* is the only *Striga* species that attacks a dicotyledon host and usually infects Fabaceae, especially *Vigna unguiculata* (cowpea), Convolvulaceae, Euphorbiaceae and *Nicotiana tabacum* (tobacco, Solanaceae).For the above reasons, the information for diagnosis of these only three species, Striga asiatica, *S. gesnerioides* and *S. hermonthica* are provided. Other species with importance in a limited geographical range include:・*Striga angustifolia* (Don) Saldanha (1963)・*Striga aspera* (Willd.) Benth. (1836)・*Striga densiflora* (Benth.) Benth. (1863)		examples. The additional sentences are proposed in line with an expression from DP 18 "Anguina spp.". *Category : SUBSTANTIVE*	
37	51	The greatest damage to crops is caused by three species: *Striga asiatica*, *S. gesnerioides* and *S. hermonthica* (Mohamed *et al.*, 2001). *S. asiatica* and *S. hermonthica* are among the most economically damaging weeds in the world. In Africa, these two pests attack grain crops and cereals, including *Zea mays* (maize), *Pennisetum* spp. (pearl millet), *Eleusine coracana* (finger millet), *Panicum* spp., ~~*Eragostis*~~*Eragrostis tef* (teff) and *Sorghum bicolor* (sorghum), with some impacts on *Saccharum* spp. (sugarcane) and *Oryza sativa* (dryland rice), and can reduce the crop yield value by USD 7 billion every year (Ejeta, 2007; Csurhes *et al.*, 2016). *S. gesnerioides* is the only *Striga* species that attacks a dicotyledon host and usually infects Fabaceae, especially *Vigna unguiculata* (cowpea), Convolvulaceae, Euphorbiaceae and *Nicotiana tabacum* (tobacco, Solanaceae).	P	**European Union** Correct the mistake when writing Eragostis tef on Eragrostis tef in Latin *Category : EDITORIAL*	**Incorporated**
38	51	The greatest damage to crops is caused by three species: *Striga asiatica*, *S. gesnerioides* and *S. hermonthica* (Mohamed *et al.*, 2001). *S. asiatica*	C	**European Union** We suggest add the following: The greatest damage to the affected plant is caused by S. hermonthica During the first month of vegetation, when	**Considered but not incorporated** No need to add this, the emphasis is on seed inspection, not on physiology of damage

		and *S. hermonthica* are among the most economically damaging weeds in the world. In Africa, these two pests attack grain crops and cereals, including *Zea mays* (maize), *Pennisetum* spp. (pearl millet), *Eleusine coracana* (finger millet), *Panicum* spp., *Eragostis tef* (teff) and *Sorghum bicolor* (sorghum), with some impacts on *Saccharum* spp. (sugarcane) and *Oryza sativa* (dr yland rice), and can reduce the crop yield value by USD 7 billion every year (Ejeta, 2007; Csurhes *et al.*, 2016). *S. gesnerioides* is the only *Striga* species that attacks a dicotyledon host and usually infects Fabaceae, especially *Vigna unguiculata* (cowpea), Convolvulaceae, Euphorbiaceae and *Nicotiana tabacum* (tobacco, Solanaceae).		feeding on the nutrient the species forms underground shoots which can be very numerous - up to 500 per plant. Loss of crop ranges from 40 to100%. Unlike other types of Striga, this species is an obligate outcrosser. *Category : SUBSTANTIVE*	
39	51	The greatest damage to crops is caused by three species: *Striga asiatica*, *S. gesnerioides* and *S. hermonthica* (Moha med *et al.*, 2001). *S. asiatica* and *S. hermonthica* are among the most economically damaging weeds in the world. In Africa, these two pests attack grain crops and cereals, including *Zea mays* (maize), *Pennisetum* spp. (pearl millet), *Eleusine coracana* (finger millet), *Panicum* spp., *Eragostis tef* (teff) and *Sorghum bicolor* (sorghum), with some impacts on *Saccharum* spp. (sugarcane) and *Oryza sativa* (dryland rice), and can reduce the crop yield value by USD 7 billion every year (Ejeta, 2007; Csurhes *et al.*, 2016). *S. gesnerioides* is the only *Striga* species that attacks a dicotyledon host and usually infects Fabaceae, especially *Vigna unguiculata* (cowpea), Convolvulaceae, Euphorbiaceae and *Nicotiana tabacum* (tobacco, Solanaceae).	C	**European Union** **A** Does these families (Convolvulaceae, Euphorbiaceae) include crop species injuried by Striga spp. or does they refer to wild plants? Maybe useful to specify because for all other taxa cited, a name of common crop is given. **B** In the first sentence the reference given is Mohamed et al 2001. This reference does not seem correct (the essenital content of the articile is about species description) and should be checked by the authors. It seems that a reference to Mohamed et al 2006 is more appropriate. Mohamed KI, Papes M, Williams R, BenzBW & Peterson T (2006) Global Invasive Potential of 10 Parasitic Witchweeds and Related Orobanchaceae. Ambio 35 6 Furthermore, Spallek et al (2013) https://onlinelibrary.wiley.com/doi/full/10.1111/mpp.12058 citing Parker 2009 (which we have not been able to access so far) refers to five species of economic importance. Only five Striga species are currently of economic importance, with S. hermonthica causing by far the most serious damage to sub-Saharan cereal production, followed by S. asiatica, S. gesnerioides and, to a far lesser extent, S. aspera and S. forbesi Benth. **C** A reference is needed to support the statement made in S. gesnerioides (last sentence) **D**	**Comment A - Considered but not incorporated** The common name for *S. gesnerioides* is given in paragraph 69 of the draft protocol **Comment B - Considered but not incorporated** Mohamed et al. (2001) is the most comprehensive treatment **Comment C - Modified** Reference of Mohamed & Musselman (2019) added **Comment D - Considered but not incorporated**

				Csurhes et al., 2016 is a risk assessment from Australia. Firstly, it better to use the primary references (which there are many) and secondly the summary in the RA states that three species can cause 7 billion in damage – in this paragraph, the wayit can be read is that two species (S. asiatica and S. hermonthica) reduce crop yields by USD 7 billion. **E** The use of some in 'with some impacts on Saccharum spp. (sugarcane) and Oryza sativa (dryland rice)' is not clear is it to a lesser extent than the aforementioned? Is this really the case for rice? , **F** Editorial To avoid any misunderstanding we would suggest to write "Fabaceae, especially Vigna inguiculata (cowpea)," as follows "Fabaceae (especially Vigna unguiculata (cowpea)),". *Category : TECHNICAL*	Estimates of crop damage are not relevant here **Comment E - Considered but not incorporated** The extent refers to the frequency of the parasite, not the intensity of the parasitism **Comment F - Incorporated** Brackets added
40	51	The greatest damage to crops is caused by three species: *Striga asiatica*, *S. gesnerioides* and *S. hermonthica* (Mohamed *et al.*, 2001). *S. asiatica* and *S. hermonthica* are among the most economically damaging weeds in the world. In Africa, these two pests attack grain crops and cereals, including *Zea mays* (maize), *Pennisetum* spp. (pearl millet), *Eleusine coracana* (finger millet), *Panicum* spp., *Eragostis tef* (teff) and *Sorghum bicolor* (sorghum), with some impacts on *Saccharum* spp. (sugarcane) and *Oryza sativa* (dryland rice), and can reduce the crop yield value by USD 7 billion every year (Ejeta, 2007; Csurhes *et al.*, 2016). *S. gesnerioides* is the ~~only~~ important *Striga* species that attacks ~~a~~ dicotyledon ~~host~~ plants as main hosts and usually infects Fabaceae, especially *Vigna unguiculata* (cowpea), Convolvulaceae, Euphorbiaceae and *Nicotiana tabacum* (tobacco, Solanaceae).	P	**Japan** There are reports that other species (e.g. Striga densiflora) than S. gesnerioides attacks dicotyledon plants even though they are not main hosts. (For reference) According to CPC/CABI(2019), "Wild hosts are mostly members of the Poaceae but also include some Cyperaceae and dicots. Kumar and Solomon (1941) record 24 hosts species. Their 18 newly observed hosts included Andropogon, Digitaria, Dactyloctenium, Euchlaena, Lophopogon, Paspalum, Setaria, Tragus and Tripogon species as well as species of Commelina, Cyperus, Desmodium, Glossocardia, Indigofera and Iseilema." *Category : SUBSTANTIVE*	**Considered but not incorporated** This protocol emphasizes species of agronomic importance. The parasitism of weedy or wild species is not relevant
41	51	The greatest damage to crops is caused by three species: *Striga asiatica*, *S. gesnerioides* and	C	**EPPO** We suggest add the following: The greatest damage to the affected plant is caused by S.	**See answer to comment 38**

		S. hermonthica (Mohamed *et al.*, 2001). *S. asiatica* and *S. hermonthica* are among the most economically damaging weeds in the world. In Africa, these two pests attack grain crops and cereals, including *Zea mays* (maize), *Pennisetum* spp. (pearl millet), *Eleusine coracana* (finger millet), *Panicum* spp., *Eragostis tef* (teff) and *Sorghum bicolor* (sorghum), with some impacts on *Saccharum* spp. (sugarcane) and *Oryza sativa* (dryland rice), and can reduce the crop yield value by USD 7 billion every year (Ejeta, 2007; Csurhes *et al.*, 2016). *S. gesnerioides* is the only *Striga* species that attacks a dicotyledon host and usually infects Fabaceae, especially *Vigna unguiculata* (cowpea), Convolvulaceae, Euphorbiaceae and *Nicotiana tabacum* (tobacco, Solanaceae).		hermonthica During the first month of vegetation, when feeding on the nutrient the species forms underground shoots which can be very numerous - up to 500 per plant. Loss of crop ranges from 40 to100%. Unlike other types of Striga, this species is an obligate outcrosser. *Category : TECHNICAL*	
42	51	The greatest damage to crops is caused by three species: *Striga asiatica*, *S. gesnerioides* and *S. hermonthica* (Mohamed *et al.*, 2001). *S. asiatica* and *S. hermonthica* are among the most economically damaging weeds in the world. In Africa, these two pests attack grain crops and cereals, including *Zea mays* (maize), *Pennisetum* spp. (pearl millet), *Eleusine coracana* (finger millet), *Panicum* spp., *Eragostis tef* (teff) and *Sorghum bicolor* (sorghum), with some impacts on *Saccharum* spp. (sugarcane) and *Oryza sativa* (dryland rice), and can reduce the crop yield value by USD 7 billion every year (Ejeta, 2007; Csurhes *et al.*, 2016). *S. gesnerioides* is the only *Striga* species that attacks a dicotyledon host and usually infects Fabaceae, especially *Vigna unguiculata* (cowpea), Convolvulaceae, Euphorbiaceae and *Nicotiana tabacum* (tobacco, Solanaceae).	C	**EPPO** In the first sentence the reference given is Mohamed et al 2001. This reference does not seem correct (the essenital content of the articile is about species description) and should be checked by the authors. It seems that a reference to Mohamed et al 2006 is more appropriate. Mohamed KI, Papes M, Williams R, BenzBW & Peterson T (2006) Global Invasive Potential of 10 Parasitic Witchweeds and Related Orobanchaceae. Ambio 35 6 Furthermore, Spallek et al (2013) https://onlinelibrary.wiley.com/doi/full/10.1111/mpp.12058 citing Parker 2009 (which we have not been able to access so far) refers to five species of economic importance. Only five Striga species are currently of economic importance, with S. hermonthica causing by far the most serious damage to sub-Saharan cereal production, followed by S. asiatica, S. gesnerioides and, to a far lesser extent, S. aspera and S. forbesi Benth. A reference is needed to support the statement made in S. gesnerioides (last sentence) Csurhes et al., 2016 is a risk assessment from Australia. Firstly, it better to use the primary references (which there are many) and secondly the summary in the RA states that three species can cause 7 billion in damage – in this paragraph, the wayit can be read is that two species (S. asiatica and S. hermonthica) reduce crop yields by USD 7	**See answer to comment 39**

				billion. The use of some in 'with some impacts on Saccharum spp. (sugarcane) and Oryza sativa (dryland rice)' is not clear is it to a lesser extent than the aforementioned? Is this really the case for rice? , Editorial To avoid any misunderstanding we would suggest to write Fabaceae, especially Vigna inguiculata (cowpea), as follows Fabaceae (especially Vigna unguiculata (cowpea)), *Category : TECHNICAL*	
43	51	The greatest damage to crops is caused by three species: *Striga asiatica*, *S. gesnerioides* and *S. hermonthica* (Moha med *et al.*, 2001). *S. asiatica* and *S. hermonthica* are among the most economically damaging weeds in the world. In Africa, these two pests attack grain crops and cereals, including *Zea mays* (maize), *Pennisetum* spp. (pearl millet), *Eleusine coracana* (finger millet), *Panicum* spp., *Eragostis tef* (teff) and *Sorghum bicolor* (sorghum), with some impacts on *Saccharum* spp. (sugarcane) and *Oryza sativa* (dryland rice), and can reduce the crop yield value by USD 7 billion every year (Ejeta, 2007; Csurhes *et al.*, 2016). *S. gesnerioides* is the only *Striga* species that attacks a dicotyledon host and usually infects Fabaceae, especially *Vigna unguiculata* (cowpea), Convolvulaceae, Euphorbiaceae and *Nicotiana tabacum* (tobacco, Solanaceae).	C	**EPPO** Does these families include crop species injuried by Striga spp. or does they refer to wild plants? Maybe useful to specify because for all other taxa cited, a name of common crop is given. *Category : TECHNICAL*	**Modified** **see answer to comment 39a** The highlighted family names do not contain any major food crops
44	51	The greatest damage to crops is caused by three species: *Striga asiatica*, *S. gesnerioides* and *S. hermonthica* (Mohamed *et al.*, 2001). *S. asiatica* and *S. hermonthica* are among the most economically damaging weeds in the world. In Africa, these two pests attack grain crops and cereals, including *Zea mays* (maize), *Pennisetum* spp. (pearl millet), *Eleusine coracana* (finger	C	**EPPO** Correct the mistake when writing Eragostis tef on Eragrostis tef in Latin *Category : EDITORIAL*	**Incorporated** Spelling corrected

		millet), *Panicum* spp., *Eragostis tef* (teff) and *Sorghum bicolor* (sorghum), with some impacts on *Saccharum* spp. (sugarcane) and *Oryza sativa* (dryland rice), and can reduce the crop yield value by USD 7 billion every year (Ejeta, 2007; Csurhes *et al.*, 2016). *S. gesnerioides* is the only *Striga* species that attacks a dicotyledon host and usually infects Fabaceae, especially *Vigna unguiculata* (cowpea), Convolvulaceae, Euphorbiaceae and *Nicotiana tabacum* (tobacco, Solanaceae).			
45	51	The greatest damage to crops is caused by three species: *Striga asiatica*, *S. gesnerioides* and *S. hermonthica* (Mohamed *et al.*, 2001). *S. asiatica* and *S. hermonthica* are among the most economically damaging weeds in the world. In Africa, these two pests attack grain crops and cereals, including *Zea mays* (maize), *Pennisetum* spp. (pearl millet), *Eleusine coracana* (finger millet), *Panicum* spp., ~~*Eragostis*~~*Eragrostis tef* (teff) and *Sorghum bicolor* (sorghum), with some impacts on *Saccharum* spp. (sugarcane) and *Oryza sativa* (dryland rice), and can reduce the crop yield value by USD 7 billion every year (Ejeta, 2007; Csurhes *et al.*, 2016). *S. gesnerioides* is the only *Striga* species that attacks a dicotyledon host and usually infects Fabaceae, especially *Vigna unguiculata* (cowpea), Convolvulaceae, Euphorbiaceae and *Nicotiana tabacum* (tobacco, Solanaceae).	P	**Australia** spelt incorrectly as Eragostis *Category : EDITORIAL*	**Incorporated** Spelling corrected
46	51	The greatest damage to crops is caused by three species: *Striga asiatica*, *S. gesnerioides* and *S. hermonthica* (Mohamed *et al.*, 2001). ~~*S.*~~ *Striga asiatica* and *S. hermonthica* are among the most economically damaging weeds in the world. In Africa, these two pests attack grain crops and cereals, including *Zea mays* (maize), *Pennisetum* spp. (pearl millet), *Eleusine coracana* (finger millet), *Panicum* spp., *Eragostis tef* (teff) and	P	**United States of America** When the species name is at the beginning of a sentence, use the entire word Striga and not just S. *Category : EDITORIAL*	**Considered but not incorporated** This is a valid comment to make, as the normal rule is not to use abbreviations at the start of a sentence. However, IPPC style is to use the abbreviated genus at the beginning of sentences: this was the style specified in the 2016 IPPC Style Guide. The style was set to avoid clutter in a DP, as the name of the target pest is used so frequently.

		Sorghum bicolor (sorghum), with some impacts on *Saccharum* spp. (sugarcane) and *Oryza sativa* (dryland rice), and can reduce the crop yield value by USD 7 billion every year (Ejeta, 2007; Csurhes *et al.*, 2016). *S. gesnerioides* is the only *Striga* species that attacks a dicotyledon host and usually infects Fabaceae, especially *Vigna unguiculata* (cowpea), Convolvulaceae, Euphorbiaceae and *Nicotiana tabacum* (tobacco, Solanaceae).			
47	51	The greatest damage to crops is caused by three species: *Striga asiatica*, *S. gesnerioides* and *S. hermonthica* (Mohamed *et al.*, 2001). *S. asiatica* and *S. hermonthica* are among the most economically damaging weeds in many parts of the world. In Africa, these two pests attack grain crops and cereals, including *Zea mays* (maize), *Pennisetum* spp. (pearl millet), *Eleusine coracana* (finger millet), *Panicum* spp., *Eragostis tef* (teff) and *Sorghum bicolor* (sorghum), with some impacts on *Saccharum* spp. (sugarcane) and *Oryza sativa* (dryland rice), and can reduce the crop yield value by USD 7 billion every year (Ejeta, 2007; Csurhes *et al.*, 2016). *S. gesnerioides* is the only *Striga* species that attacks a dicotyledon host and usually infects Fabaceae, especially *Vigna unguiculata* (cowpea), Convolvulaceae, Euphorbiaceae and *Nicotiana tabacum* (tobacco, Solanaceae).	P	**Japan** Add " many parts of". Both species are not distributed all over the world. *Category : SUBSTANTIVE*	**Modified** Changed this to "several parts of the world."
48	51	The greatest damage to crops is caused by three species: *Striga asiatica*, *S. gesnerioides* and *S. hermonthica* (Mohamed *et al.*, 2001). *S. asiatica* and *S. hermonthica* are among the most economically damaging weeds in the world. In Africa, these two pests attack grain crops and cereals, including *Zea mays* (maize), *Pennisetum* spp. (pearl millet), *Eleusine coracana* (finger millet), *Panicum* spp., *Eragostis tef* (teff) and *Sorghum bicolor* (sorghum), with some impacts on *Saccharum* spp. (sugarcane) and *Oryza sativa*	P	**Japan** Delete "by USD 7 billion every year". There are various ways of taking data on yield losses (e.g. sample size of fields are different case by case), so the figures varies depending on the situation. The specific figure may induce misleading. *Category : SUBSTANTIVE*	**Incorporated** Specific figure removed

		(dryland rice), and can reduce the crop yield value ~~by USD 7 billion~~ every year (Ejeta, 2007; Csurhes *et al.*, 2016). *S. gesnerioides* is the only *Striga* species that attacks a dicotyledon host and usually infects Fabaceae, especially *Vigna unguiculata* (cowpea), Convolvulaceae, Euphorbiaceae and *Nicotiana tabacum* (tobacco, Solanaceae).			
49	51	The greatest damage to crops is caused by three species: *Striga asiatica*, *S. gesnerioides* and *S. hermonthica* (Mohamed *et al.*, 2001). *S. asiatica* and *S. hermonthica* are among the most economically damaging weeds in the world. In Africa, these two pests attack grain crops and cereals, including *Zea mays* (maize), *Pennisetum* spp. (pearl millet), *Eleusine coracana* (finger millet), *Panicum* spp., *Eragostis tef* (teff) and *Sorghum bicolor* (sorghum), with some impacts on *Saccharum* spp. (sugarcane) and *Oryza sativa* (dryland rice), and can reduce the crop yield value by USD 7 billion every year (Ejeta, 2007; Csurhes *et al.*, 2016). *S. gesnerioides* is the only *Striga* species that attacks a dicotyledon host and usually infects Fabaceae, especially *Vigna unguiculata* (cowpea), Convolvulaceae, Euphorbiaceae and *Nicotiana tabacum* (tobacco, Solanaceae).	C	**Kenya** Striga asiatica The first word in a sentence , the genera is written in full not as an initial. *Category : TECHNICAL*	**Considered but not incorporated** See answer to comment 46
50	51	The greatest damage to crops is caused by three species: *Striga asiatica*, *S. gesnerioides* and *S. hermonthica* (Mohamed *et al.*, 2001). *S. asiatica* and *S. hermonthica* are among the most economically damaging weeds in the world. In Africa, these two ~~pests~~ species attack grain crops and cereals, including *Zea mays* (maize), *Pennisetum* spp. (pearl millet), *Eleusine coracana* (finger millet), *Panicum* spp., *Eragostis tef* (teff) and *Sorghum bicolor* (sorghum), with some impacts on *Saccharum* spp. (sugarcane) and *Oryza sativa* (dryland rice), and can reduce the crop yield value	P	**Japan** editorial revision *Category : EDITORIAL*	**Incorporated** Word changed to species

		by USD 7 billion every year (Ejeta, 2007; Csurhes *et al.*, 2016). *S. gesnerioides* is the only *Striga* species that attacks a dicotyledon host and usually infects Fabaceae, especially *Vigna unguiculata* (cowpea), Convolvulaceae, Euphorbiaceae and *Nicotiana tabacum* (tobacco, Solanaceae).			
51	51	The greatest damage to crops is caused by three species: *Striga asiatica*, *S. gesnerioides* and *S. hermonthica* (Mohamed *et al.*, 2001). *S. asiatica* and *S. hermonthica* are among the most economically damaging weeds in the world. In Africa, these two pests attack grain crops and cereals, including *Zea mays* (maize), *Pennisetum* spp. (pearl millet), *Eleusine coracana* (finger millet), *Panicum* spp., ~~*Eragostis*~~*Eragrostis tef* (teff) and *Sorghum bicolor* (sorghum), with some impacts on *Saccharum* spp. (sugarcane) and *Oryza sativa* (dryland rice), and can reduce the crop yield value by USD 7 billion every year (Ejeta, 2007; Csurhes *et al.*, 2016). *S. gesnerioides* is the only *Striga* species that attacks a dicotyledon host and usually infects Fabaceae, especially *Vigna unguiculata* (cowpea), Convolvulaceae, Euphorbiaceae and *Nicotiana tabacum* (tobacco, Solanaceae).	P	**China** Eragrostis tef (teff). Here the name of crop should be Eragrostis tef (teff). *Category : EDITORIAL*	**Incorporated** Spelling corrected
52	52	~~*S.*~~ *Striga asiatica* is native to Africa, India, and China (APHIS, 2011) and may represent a series of related species (Mohamed *et al.*, 2001). It has spread to parts of North America and the Asia Pacific region (Nail *et al.*, 2014).	P	**United States of America** see above *Category : EDITORIAL*	**Considered but not incorporated** See answer to comment 46
53	53	*S. gesnerioides* is found throughout much of Africa, the Arabian peninsula and the Indian subcontinent. This parasite is particularly damaging to *Vigna unguiculata* (cowpea) (Musselman and Parker, 1981a). *S. gesnerioides* is quite variable, with morphotypes associated with different hosts.	C	**United States of America** see above *Category : EDITORIAL*	**Considered but not incorporated** See answer to comment 46
54	53	*S. gesnerioides* is found throughout much of Africa, the Arabian peninsula and the Indian subcontinent.	C	**Indonesia** Indonesia proposes to write the full scientific name of the	**Considered but not incorporated** See answer to comment 46

		This parasite is particularly damaging to *Vigna unguiculata* (cowpea) (Musselman and Parker, 1981a). *S. gesnerioides* is quite variable, with morphotypes associated with different hosts.		plant only on first mention in the text. So "Vigna unguiculata" become "V. unguiculata" etc *Category : EDITORIAL*	
55	53	*S. gesnerioides* is found throughout ~~much~~ the most parts of Africa, the Arabian peninsula and the Indian subcontinent. This parasite is particularly damaging to *Vigna unguiculata* (cowpea) (Musselman and Parker, 1981a). *S. gesnerioides* is quite variable, with morphotypes associated with different hosts.	P	**Iran** *Category : EDITORIAL*	**Considered but not incorporated** Clear as written
56	54	*S. hermonthica* is native to savannah ecosystems where wild grasses (Poaceae, such as *Andropogon* species and *Setaria sphacelata*) are the hosts. However, *S. hermonthica* infestation of crops such as *Z. mays*, *Sorghum bicolor*, *Pennisetum* spp. and *Panicum* spp. can cause devastating yield losses, and the problem is increasing (Ejeta, 2007).	C	**European Union** Homogenize, genus name in full, or only full at first mention and then abbreviated. *Category : EDITORIAL*	**Incorporated**
57	54	*S. hermonthica* is native to savannah ecosystems where wild grasses (Poaceae, such as *Andropogon* species and *Setaria sphacelata*) are the hosts. However, *S. hermonthica* infestation of crops such as *Z. mays*, *Sorghum bicolor*, *Pennisetum* spp. and *Panicum* spp. can cause devastating yield losses, and the problem is increasing (Ejeta, 2007).	C	**European Union** Are 'wild grasses (Poaceae, such as Andropogon species and Setaria sphacelata)' natural hosts? *Category : TECHNICAL*	**Considered but not incorporated** Yes, species of these genera are parasitized along with a great many other native grasses. No change needed.
58	54	*S. hermonthica* is native to savannah ecosystems where wild grasses (Poaceae, such as *Andropogon* species and *Setaria sphacelata*) are the hosts. However, *S. hermonthica* infestation of crops such as *Z. mays*, *Sorghum bicolor*, *Pennisetum* spp. and *Panicum* spp. can cause devastating yield losses, and the problem is increasing (Ejeta, 2007).	C	**EPPO** Are 'wild grasses (Poaceae, such as Andropogon species and Setaria sphacelata)' natural hosts? *Category : TECHNICAL*	**Considered but not incorporated** See answer to comment 57
59	54	*S. hermonthica* is native to savannah ecosystems where wild grasses (Poaceae, such as *Andropogon* species and *Setaria sphacelata*) are the hosts. However, *S. hermonthica* infestation of	C	**EPPO** Homogenize, genus name in full, or only full at first mention and then abbreviated. *Category : EDITORIAL*	**Incorporated**

		crops such as *Z. mays*, *Sorghum bicolor*, *Pennisetum* spp. and *Panicum* spp. can cause devastating yield losses, and the problem is increasing (Ejeta, 2007).			
60	54	*S. hermonthica* is native to savannah ecosystems where wild grasses (Poaceae, such as *Andropogon* species and *Setaria sphacelata*) are the hosts. However, *S. hermonthica* infestation of crops such as *Z. mays*, *Sorghum bicolor*, *Pennisetum* spp. and *Panicum* spp. can cause devastating yield losses, and the problem is ~~increasing~~ becoming worse (Ejeta, 2007).	P	**United States of America** Better language *Category : EDITORIAL*	**Modified** Wording changed to "worsening"
61	54	*S. hermonthica* is native to savannah ecosystems where wild grasses (Poaceae, such as *Andropogon* species and *Setaria sphacelata*) are the hosts. However, *S. hermonthica* infestation of crops such as *Z. mays*, *Sorghum bicolor*, *Pennisetum* spp. and *Panicum* spp. can cause devastating yield losses, and the problem is increasing (Ejeta, 2007).	C	**Indonesia** Indonesia proposes to change " Sorghum bicolor" become "S. bicolor" *Category : EDITORIAL*	**Incorporated**
62	55	~~Unlike~~ Genus Orobanche in the same family (*Orobanchaceae*) is worldwide known as another economically damaging parasitic weed. However, unlike *Striga*, plants of the related genus *Orobanche* lack chlorophyll and are fleshy with scale-like leaves and smaller flowers that are never red or pink. *Striga* is entirely Old World and tropical whereas *Orobanche* is more widespread and is present in both temperate and semitropical regions (Joel *et al*., 2007).	P	**Japan** Although Striga and Orobanche species parasitize different hosts in different parts of the world, the reason why information about Orobanche is described here is not clear. *Category : SUBSTANTIVE*	**Considered but not incorporated** The reason *Orobanche* was included was because of similarities of its seeds to those of *Striga*. It was agreed with the discipline lead to remove this paragraph.
63	55	Unlike *Striga*, plants of the related genus *Orobanche* lack chlorophyll and are fleshy with scale-like leaves and smaller flowers that are never red or pink. *Striga* is entirely Old World and tropical whereas *Orobanche* is more widespread and is present in both temperate and semitropical regions (Joel *et al*., 2007).	C	**European Union** It is important to know if you consider Orobanche s. l.. The genus Phelipanche is generally distinguished from Orobanche s. s.. Phelipanche have usually purple-blue flowers. Some Orobanche species, such as Orobanche sanguinea or Orobanche gracilis, have garnet red, reddish or pink flowers. *Category : SUBSTANTIVE*	**See answer to comment 62**

64	55	Unlike *Striga*, plants of the related genus *Orobanche* lack chlorophyll and are fleshy with scale-like leaves and smaller flowers that are never red or pink. *Striga* is entirely Old World and tropical whereas *Orobanche* is more widespread and is present in both temperate and semitropical regions (Joel *et al*., 2007).	C	**EPPO** It is important to know if you consider Orobanche s. l.. The genus Phelipanche is generally distinguished from Orobanche s. s.. Phelipanche have usually purple-blue flowers. Some Orobanche species, such as Orobanche sanguinea or Orobanche gracilis, have garnet red, reddish or pink flowers. *Category : SUBSTANTIVE*	**See answer to comment 62**
65	55	Unlike *Striga*, plants of the related genus *Orobanche* lack chlorophyll and are fleshy with scale-like leaves and smaller flowers that are never red or pink. *Striga* is entirely Old World and tropical whereas *Orobanche* is more widespread and is present in both temperate and semitropical regions (Joel *et al*., 2007).	C	**China** This Protocol describes Striga, not Orobanche. It is necessary to define Striga's semi-parasitic weeds and elaborate their nutritional characteristics. *Category : SUBSTANTIVE*	**Considered but not incorporated** The nutritional requirements of the two parasites is beyond the scope of the protocol. See answer to comment 62.
66	57	The time to flowering of ~~the~~ *Striga* species varies. For example, *S. gesnerioides* flowers as it emerges from the soil, whereas *S. asiatica* and *S. hermonthica* begin flowering about four weeks after emergence (Berner *et al.*, 1996). Most *Striga* species are self-pollinating, but *S. hermonthica* and *S. aspera* are out-crossers, requiring insects for pollination (Aigbokhan *et al.*, 1998). Some *Striga* seeds can tolerate short-term waterlogging (Nail *et al.*, 2014). The temperature response of *S. asiatica* appears to affect both the relative suitability of a location for growth and its cold tolerance limits. The minimum temperature for development has been found to be 20 °C; the upper limit for growth, 42 °C; and the optimal temperature range for growth, 30–34 °C (Patterson *et al.*, 1982).	P	**United States of America** If talking about all Striga specie, then "the" is not needed; unless this is intended to address only several particular species mentioned in this paragraph. *Category : EDITORIAL*	**Modified** The word species is very unusual in English as it is the singular and plural form; the word is the same—species for one, species for two or more. Changed to "among *Striga* species".
67	57	The time to flowering of the *Striga* species ~~varies~~varies according to the *Striga* species and environment conditions. For example, *S. gesnerioides* flowers as it emerges from the soil, whereas *S. asiatica* and *S. hermonthica* begin flowering about four weeks after emergence (Berner *et al.*, 1996). Most *Striga* species are self-	P	**Singapore** The added words to the first sentence provided a better explanation of the sentences to come. *Category : EDITORIAL*	**Modified** Included suggestion, slightly altered for better English. Changed to "among *Striga* species".

		pollinating, but *S. hermonthica* and *S. aspera* are out-crossers, requiring insects for pollination (Aigbokhan *et al.*, 1998). Some *Striga* seeds can tolerate short-term waterlogging (Nail *et al.*, 2014). The temperature response of *S. asiatica* appears to affect both the relative suitability of a location for growth and its cold tolerance limits. The minimum temperature for development has been found to be 20 °C; the upper limit for growth, 42 °C; and the optimal temperature range for growth, 30–34 °C (Patterson *et al.*, 1982).			
2. Taxonomic Information					
68	66	**Synonyms:** *Striga hirsuta* Benth.	C	**European Union** We propose to modify this synonym and add other ones according with the EPPO data: Buchnera hirsuta, Striga lutea, Striga lutea var. lutea. *Category : SUBSTANTIVE*	**Considered but not incorporated** There are numerous taxonomic synonyms but I think the number included should be limited. These synonyms will have little value to inspectors. First, they are readily available online through IPNI and other data bases though it is hard to imagine how inspectors would use synonyms, especially those not used for decades if not centuries. This is a technical protocol, not a monograph
69	66	**Synonyms:** *Striga hirsuta* Benth.	C	**EPPO** We propose to modify this synonym and add other ones according with the EPPO data: Buchnera hirsuta, Striga lutea, Striga lutea var. lutea *Category : SUBSTANTIVE*	**Considered but not incorporated** See answer to comment 68
70	66	**Synonyms:** *Striga hirsuta* Benth.	C	**United States of America** The USDA GRIN database lists other synonyms to consider: Basionym: Buchnera asiatica L. (=) Striga coccinea Benth. (=) Striga lutea auct. nonn. https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?id=102305 *Category : TECHNICAL*	**Considered but not incorporated** See answer to comment 68
71	67	*Striga asiatica* var. *lutea* (Lour.) M.R.Almeida	C	**European Union** The EPPO Secretariat now uses the 'plant of the world list' as a reference as it is regularly updated. This list includes the following synomyms Plants of the world list: • Buchnera aquatica Wight ex Steud. • Buchnera asiatica L. • Buchnera coccinea Benth.	**Considered but not incorporated** See answer to comment 68

				• Campuleia coccinea Hook. • Striga coccinea (Hook.) Benth. • Striga eustriga Steud. • Striga hirsuta (Benth.) Benth. • Striga lutea Lour. • Striga parvula Miq. • Striga phoenicea Benth. • Striga pusilla Hochst. ex Benth. • Striga zangebarica Klotzsch Ref POWO (2019) "Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet; http://www.plantsoftheworldonline.org/ Retrieved 25 08 2019". *Category : SUBSTANTIVE*	
72	67	*Striga asiatica* var. *lutea* (Lour.) M.R.Almeida	C	**EPPO** The EPPO Secretariat now uses the 'plant of the world list' as a reference as it is regularly updated. This list includes the following synomyms Plants of the world list: • Buchnera aquatica Wight ex Steud. • Buchnera asiatica L. • Buchnera coccinea Benth. • Campuleia coccinea Hook. • Striga coccinea (Hook.) Benth. • Striga eustriga Steud. • Striga hirsuta (Benth.) Benth. • Striga lutea Lour. • Striga parvula Miq. • Striga phoenicea Benth. • Striga pusilla Hochst. ex Benth. • Striga zangebarica Klotzsch Ref POWO (2019) "Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet; http://www.plantsoftheworldonline.org/ Retrieved 25 08 2019." *Category : SUBSTANTIVE*	**Considered but not incorporated** See answer to comment 68
73	67	*Striga asiatica* var. *lutea* (Lour.) M.R.Almeida *Buchnera asiatica* L.*Striga asiatica* var. *humilis* (Benth.) D.Y. Hong*Striga lutea* var. *bicolor* Kuntze	P	**China** reference : http://www.tropicos.org/Name/29200215?tab=synonyms Information needs to be complete. *Category : SUBSTANTIVE*	**Considered but not incorporated** See answer to comment 68
74	70	**Synonyms:** *Buchnera gesnerioides* Willd.	C	**United States of America** Other synonyms listed in GRIN database: • (=) Striga chloroleuca Dinter • (=) Striga orchidea Hochst. https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?id=102302	**Considered but not incorporated** See answer to comment 68

				Category : TECHNICAL	
75	71	*Buchnera orobanchoides* R.Br. *Striga chloroleuca* Dinter	P	**European Union** This synonym was missing. *Category : SUBSTANTIVE*	**Considered but not incorporated** See answer to comment 68
76	71	*Buchnera orobanchoides* R.Br. *Striga chloroleuca* Dinter	P	**EPPO** This synonym was missing. *Category : SUBSTANTIVE*	**Considered but not incorporated** See answer to comment 68
77	72	*Striga orobanchoides* Benth.*Striga chloroleuca* Dinter	P	**China** reference : http://www.tropicos.org/Name/29203615?tab=synonyms Information needs to be complete. *Category : SUBSTANTIVE*	**Considered but not incorporated** See answer to comment 68
3.1 Sampling and sample submission					
78	80	~~The samples taken from imported consigments should be submitted to a laboratory for inspection.~~	P	**Argentina** We suggest to delete Section 3.1 and to move the first paragraph to the end of section 3.1.1 *Category : TECHNICAL*	**Incorporated** Modified 3.1, as suggested and deleted paragraph 80. The entire section has been edited including the new section heading to 3.1 "Sampling procedures"
79	80	The samples taken from imported ~~consigments~~ consignments should be submitted to a laboratory for inspection.	P	**Australia** spelt incorrectly as consigments *Category : EDITORIAL*	**Considered but not incorporated** Paragraph deleted as per other country comments
80	80	~~The samples taken from imported consigments should be submitted to a laboratory for inspection.~~	P	**Uruguay** *Category : TECHNICAL*	**Incorporated** see answer to comment 78
81	80	The samples taken from imported consigments should be submitted to a laboratory for inspection.	C	**Uruguay** We suggest to delete Section 3.1 and to move the first paragraph to the end of section 3.1.1 *Category : TECHNICAL*	**Incorporated** see answer to comment 78
82	80	~~The samples taken from imported consigments should be submitted to a laboratory for inspection.~~	P	**Peru** *Category : TECHNICAL*	**Incorporated** see answer to comment 78
83	80	The samples taken from imported consigments should be submitted to a laboratory for inspection.	P	**Indonesia** Indonesia proposes to change mistyping "consigments" become "consignments" *Category : EDITORIAL*	**Considered but not incorporated** Paragraph deleted as per other country comments
84	80	The samples taken from ~~imported consigments should be~~ consignments are inspected and if necessary submitted to ~~a~~ the laboratory for ~~inspection~~further diagnostic analysis.	P	**Japan** Not all countries take the same process described in the text (i.e. submitted samples to a laboratory for inspection). Therefore, the text should be revised according to inspection purpose and the method of inspection that can actually be taken. *Category : TECHNICAL*	**Considered but not incorporated** Paragraph deleted as per other country comments
85	80	This section does not cover plants and plant debris because seeds are mainly introduced into countries	P	**Japan** The content of "3. Detection" section covers only seeds but	**Considered but not incorporated**

		through contaminated consignments.The samples taken from imported consigments should be submitted to a laboratory for inspection.		there is no explanation why only seeds are targeted in the section. A pathway of Striga plants into countries through imported/exported consignments is mainly seed of Striga rather than plants and debris. *Category : SUBSTANTIVE*	Paragraph deleted as per other country comments
86	80	The samples taken from imported consigments should be submitted to a laboratory for ~~inspection.~~analysis	P	**Kenya** delete inspection *Category : TECHNICAL*	**Considered but not incorporated** Paragraph deleted as per other country comments
87	80	The samples taken from imported ~~consigments~~ consignments should be submitted to a laboratory for inspection.	P	**Singapore** spelling error for consignments *Category : EDITORIAL*	**Considered but not incorporated** Paragraph deleted as per other country comments
88	80	The samples taken from imported ~~consigments~~ consignments should be submitted to a laboratory for inspection.	P	**Thailand** *Category : EDITORIAL*	**Considered but not incorporated** Paragraph deleted as per other country comments
89	80	~~The samples taken from imported consigments should be submitted to a laboratory for inspection.~~	P	**COSAVE** *Category : TECHNICAL*	**Incorporated** see answer to comment 78
90	81	When surveys are carried out to detect *Striga* in fields, there are several detection methods, such as visual examination of the symptoms of Striga infestation on cultivated crops and the presence of Striga plants above ground in fields, and diagnostic analysis of soil seed banks. When soil seed banks are ~~usually sampled. Soil~~ analysed, soil samples are collected and submitted to the laboratory for further diagnostic analysis.	P	**Japan** The method of survey is not only analyzing soil seed banks but also included visual examination of the symptoms of Striga infestation on cultivated crops and the presence of Striga plants above ground in fields. The survey methods related to this DP, i.e. "visual examination of Striga plants above ground in fields" and "analyzing soil seed banks" may be better to be added as examples. (For reference) Parkinson VO, 1989. A survey of infestation of crops by Striga spp. in Benin, Nigeria and Togo. Proceedings of the Nova Scotian Institute of Science, 39(1):1-9 Atsbha Gebreslasie, Taye Tessema, Ibrahim Hamza and Demeke Nigussie, 2016. Abundance and distribution of Striga (Striga hermonthica (Del.) Benth.) infestation in selected sorghum (Sorghum bicolour L. Moench) growing areas of Tigray Region, Ethiopia. African Journal of Agricultural Research, 11(45), 4674-4682 *Category : SUBSTANTIVE*	**Considered but not incorporated** This is the practice at the time of the investigation and is not the focus of the present draft. Paragraph deleted as per other country comments.
91	81	When surveys are carried out to detect *Striga* in fields, soil seed banks are usually sampled. Soil samples are collected and submitted to the laboratory for further diagnostic analysis.	C	**European Union** Add plants and their rhizomes affected by Striga spp. in the list of samples necessary for sampling. *Category : SUBSTANTIVE*	**Modified** This draft is primarily an identification of *Striga.* The lead author and Discipline Lead, with the approval of thr TPDP added new tables to Section 1 Pest Information (Table 1 offering a list of host plants of *Striga asiatica and Striga hermonthica* and Table 2

					offers a list of host plants of *Striga gesnerioides)*. Both tables are not inclusive.
92	81	~~When surveys are carried out to detect *Striga* in fields, soil seed banks are usually sampled. Soil samples are collected and submitted to the laboratory for further diagnostic analysis.~~	P	**Argentina** We suggest to delete Section 3.1 and to move the first paragraph to the end of section 3.1.1 *Category : TECHNICAL*	**Incorporated** Modified 3.1, as suggested and deleted paragraph 81. The entire section has been edited including the section heading to 3.1 "Sampling Procedures"
93	81	When surveys are carried out to detect *Striga* in fields, soil seed banks are usually sampled. Soil samples are collected and submitted to the laboratory for further diagnostic analysis.	C	**EPPO** Add plants and their rhizomes affected by Striga spp. in the list of samples necessary for sampling. *Category : SUBSTANTIVE*	**Modified**see answer to comment 91
94	81	When surveys are carried out to detect *Striga* in fields, soil seed banks are usually sampled. Soil samples are collected and submitted to the laboratory for further diagnostic analysis.	C	**United States of America** Most of the guidelines provided here do not refer on how to detect Striga in the soil, instead it focuses on consignments. Suggest removing this paragraph or adding more information about how to handle soil samples later in the document. *Category : TECHNICAL*	**Incorporated** see answer to comment 92
95	81	~~When surveys are carried out to detect *Striga* in fields, soil seed banks are usually sampled. Soil samples are collected and submitted to the laboratory for further diagnostic analysis.~~	P	**Uruguay** We suggest to delete section 3.1, see comment above *Category : TECHNICAL*	**Incorporated**
96	81	~~When surveys are carried out to detect *Striga* in fields, soil seed banks are usually sampled. Soil samples are collected and submitted to the laboratory for further diagnostic analysis.~~	P	**Peru** Se sugiere eliminar toda esta sección y mover el párrafo al final de la sección 3.1.1 *Category : TECHNICAL*	**Incorporated**
97	81	When surveys are carried out to detect *Striga* in fields, soil seed banks are usually sampled. Soil samples are collected and submitted to the laboratory for further diagnostic analysis.	C	**COSAVE** Se sugiere eliminar toda esta sección y mover el párrafo al final de la sección 3.1.1 We suggest to delete Section 3.1 and to move the first paragraph to the end of section 3.1.1 *Category : TECHNICAL*	**Incorporated**
98	81	~~When surveys are carried out to detect *Striga* in fields, soil seed banks are usually sampled. Soil samples are collected and submitted to the laboratory for further diagnostic analysis.~~	P	**COSAVE** *Category : TECHNICAL*	**Incorporated**
3.1.1 Sampling procedures					
99	82	**3.1.1 Sampling ~~procedures~~procedures from consignments**	P	**Japan** Information in this sub-section is just for sampling	**Considered but not incorporated**

				procedures from imported/exported consignments not for sampling procedures for field survey *Category : SUBSTANTIVE*	No need to particular emphasis. Section 3.1.1 has been deleted and Section 3.1 is now "Sampling procedures"
100	83	A consignment lot of seeds, grain, or other agricultural commodity that contains intact seeds with a homogenous or uniform distribution, should be sampled according to ISPM 31 (*Methodologies for sampling of consignments*). Consignments of processed grain, flour or non-pelleted animal feed that are suspected to have been contaminated with *Striga* should be sampled in accordance with ISPM 31.	C	**European Union** What is meant exactly by contains intact seeds with a homogenous or uniform distribution,? Not clear what guidance is given there *Category : TECHNICAL*	**Modified** The text has been simplified. As per country comments this section is now 3.1 Sampling procedures.
101	83	A consignment ~~lot~~ of seeds, grain, or other agricultural commodity that contains intact seeds with a homogenous or uniform distribution, should be sampled according to ISPM 31 (*Methodologies for sampling of consignments*). Consignments of processed grain, flour or non-pelleted animal feed that are suspected to have been contaminated with *Striga* should be sampled in accordance with ISPM 31.	P	**European Union** Delete 'lot' - it is redundant. *Category : EDITORIAL*	**Incorporated**
102	83	A consignment ~~lot~~ of seeds, grain, or other ~~agricultural commodity that contains intact seeds with a homogenous~~ commodity, such as processed grain, flour or ~~uniform distribution~~non-pelleted animal feed, that are suspected to have been contaminated with Striga should be sampled ~~according to~~ in accordance with ISPM 31 (*Methodologies for sampling of consignments*). ~~Consignments of processed grain, flour or non-pelleted animal feed that are suspected~~ The samples taken from imported consignment should be submitted to ~~have been contaminated with~~ a laboratory for inspection~~*Striga* should be sampled in accordance with ISPM 31~~.	P	**Argentina** Consignment lots is redundant as per definition in ISPM 5. Text simplified for a better reading. Last sentence moved from first paragraph of section 3.1 *Category : TECHNICAL*	**Modified** The text has been modified to include these suggestions. As per country comments this section is now 3.1 Sampling procedures.

103	83	A consignment lot of seeds, grain, or other agricultural commodity that contains intact seeds with a homogenous or uniform distribution, should be sampled according to ISPM 31 (*Methodologies for sampling of consignments*). Consignments of processed grain, flour or non-pelleted animal feed that are suspected to have been contaminated with *Striga* should be sampled in accordance with ISPM 31.	C	**EPPO** What is meant exactly by contains intact seeds with a homogenous or uniform distribution? Not clear what guidance is given there *Category : TECHNICAL*	**see answer to comment 100**
104	83	A consignment ~~lot~~ of seeds, grain, or other agricultural commodity that contains intact seeds with a homogenous or uniform distribution, should be sampled according to ISPM 31 (*Methodologies for sampling of consignments*). Consignments of processed grain, flour or non-pelleted animal feed that are suspected to have been contaminated with *Striga* should be sampled in accordance with ISPM 31.	P	**EPPO** Delete 'lot' *Category : EDITORIAL*	**Incorporated**
105	83	A consignment or lot of seeds, grain, or other agricultural commodity that contains intact seeds with a homogenous or uniform distribution, should be sampled according to ISPM 31 (*Methodologies for sampling of consignments*). Consignments of processed grain, flour or non-pelleted animal feed that are suspected to have been contaminated with *Striga* should be sampled in accordance with ISPM 31.	P	**United States of America** correct meaning *Category : EDITORIAL*	**Modified** See answer to comment 100
106	83	A consignment ~~lot~~ of seeds, grain, or other ~~agricultural~~ commodity such as processed grain, flour or non-pelleted animal feed, that ~~contains intact seeds~~ are suspected to have been contaminated with ~~a homogenous or uniform distribution~~Striga, should be sampled according to ISPM 31 (*Methodologies for sampling of consignments*). ~~Consignments of processed grain, flour or non-pelleted animal feed that are suspected~~ The samples taken from imported consignments should be submitted to ~~have been contaminated with~~	P	**Uruguay** Consignment lot is redundant as per definition in ISPM 5. Text simplified for better reading. Last sentence moved from first paragraph in section 3.1 *Category : TECHNICAL*	**Modified** See answer to comment 102

		a laboratory for inspection.~~*Striga* should be sampled in accordance with ISPM 31.~~			
107	83	A consignment ~~lot~~ of seeds, grain, or other ~~agricultural commodity that contains intact seeds with a homogenous~~ comodity, such as processed grain, flour or ~~uniform distribution~~non-pelleted animal feed, that are suspected have been contaminated with Striga should be ~~sampled according to~~ sampled in accordance withto ISPM 31 (*Methodologies for sampling of consignments*). ~~Consignments of processed grain, flour or non-pelleted animal feed that are suspected~~ The samples taken from imported consignment should be submitted to ~~have been contaminated with~~ a laboratory for inspection.~~*Striga* should be sampled in accordance with ISPM 31.~~	P	**Peru** Los lotes del envío es redundante con respecto a lo establecido por la NIMF 5. Texto simplificado para una mejor compresión de la lectura. La última oración fue movida al primer párrafo de la sección 3.1. *Category : TECHNICAL*	**Modified** See answer to comment 102
108	83	A consignment lot of seeds, grain, or other agricultural commodity that contains intact seeds with a homogenous or uniform distribution, should be sampled according to ISPM 31 (*Methodologies for sampling of consignments*). Consignments of processed grain, flour or non-pelleted animal feed that are suspected to have been contaminated with *Striga* should be sampled in accordance with ISPM 31.	C	**Indonesia** Indonesia proposes to add a sentence that reveals the possibility of weed dispersal through livestock faeces *Category : TECHNICAL*	**Considered but not incorporated** No suggestion made and scope of this protocol does not cover this possible dissemination.
109	83	A consignment lot of seeds, grain, or other agricultural commodity that contains intact seeds with a homogenous or uniform distribution, should be sampled according to ISPM 31 (*Methodologies for sampling of consignments*). Consignments of processed grain, flour or non-pelleted animal feed that are suspected to have been contaminated with *Striga* should be sampled in accordance with ISPM 31.	C	**Indonesia** Indonesia proposes to combine two sentences in this paragraph. *Category : SUBSTANTIVE*	**Considered but not incorporated** No suggestion given for combination of sentences.
110	83	A consignment ~~lot~~ of seeds, grain, or other ~~agricultural commodity that contains intact seeds with a homogenous~~ commodity, such as processed	P	**COSAVE** Consignment lots is redundant as per definition in ISPM 5.	**Modified** see answer to comment 102

		grain, flour or ~~uniform distribution~~non-pelleted animal feed, that are suspected to have been contaminated with Striga should be sampled ~~according to~~ in accordance with ISPM 31 (*Methodologies for sampling of consignments*). ~~Consignments of processed grain, flour or non-pelleted animal feed that are suspected~~ The samples taken from imported consignment should be submitted to ~~have been contaminated with~~ a laboratory for inspection. ~~*Striga* should be sampled in accordance with ISPM 31.~~		Text simplified for a better reading. Last sentence moved from first paragraph of section 3.1 *Category : TECHNICAL*	
111	83	A consignment lot of seeds, grain, or other agricultural commodity that contains intact seeds with a homogenous or uniform distribution, should be sampled according to ~~ISPM~~ ISPM No. 31 (*Methodologies for sampling of consignments*). Consignments of processed grain, flour or non-pelleted animal feed that are suspected to have been contaminated with *Striga* should be sampled in accordance with ~~ISPM~~ ISPM No. 31.	P	**Ghana** *Category : EDITORIAL*	**Considered but not incorporated** As per the IPPC style
3.1.2 Sub-sampling of the working sample for inspection					
112	84	~~**3.1.2 Sub-sampling of the working sample for inspection**~~	P	**Japan** Paragraph 84 - 86 are the process of sampling under the International Seed Testing Association (ISTA). International Seed Testing Rules Table 2A (ISTA, 2018)describes the sample size to inspect all sampled seeds (e.g. germination, disease, moisture) comprehensively. The rule does not apply for detection of Striga seeds contamination from imported consignments of seeds or grains. The sample size for inspection of Striga seeds from consignments should be decided in accordance with ISPM31. *Category : SUBSTANTIVE*	**Modified** The text in this section has been edited and simplified as per country comments.
113	85	Samples submitted to a laboratory should be drawn from a composite sample, which is a mixture of primary samples. The sample size recommended by the International Seed Testing Association is 25 000 seeds or a maximum of 1 kg sample (ISTA, 2018). The weight of 25 000 seeds can be referenced from International Seed Testing Rule Table 2A (ISTA, 2018), or determined by the laboratory with a	C	**Brazil** The proposed text describes the necessary details for obtaining a proper sample for Striga determination. It is also worth noting that, according to ISTA, submitted samples to be tested by seed testing labs for Striga and quality testing (purity, other seeds and germination) must be two independent samples with 25 000 seeds each (1 for Striga testing and 1 for quality testing) or the composite sample must have with at least 50 000 seeds to be divided by the lab.	**Modified - Considered but not incorporated** This comment is noted and it was well thought. However, in the DP we just refer to the lab sample for phytosanitary purposes. The TPDP also agreed to consider the same approach to the text in DP 19 *Sorghum halepense*

		thousand-seed weight test. For example, the weight of 25 000 seeds will be 1 kg for *Z. mays*, *O. sativa* and *Hordeum vulgare* and 20 g for *Panicum* spp. (millet, ISTA (2018), Table 2A). Immediately after sampling, submitted samples should be packed and sealed in an appropriate bag or container protected from contamination or leaking, with clear labels on seed lot, crop species and associated information to allow sample traceability. When a small package is less than 25 000 seeds, an appropriate bag sampling procedure should be performed after determining how many bags are equivalent to 25 000 seeds. When the whole lot is less than 25 000 seeds, the whole lot should be examined without sub-sampling procedures.		*Category : TECHNICAL*	
114	85	Samples submitted to a laboratory should be drawn from a composite sample, which is a mixture of primary samples. The sample size recommended by the International Seed Testing Association is 25 000 seeds or a maximum of 1 kg sample (ISTA, 2018). The weight of 25 000 seeds can be referenced from International Seed Testing Rule Table 2A (ISTA, 2018), or determined by the laboratory with a thousand-seed weight test. For example, the weight of 25 000 seeds will be 1 kg for *Z. mays*, *O. sativa* and *Hordeum vulgare* and 20 g for *Panicum* spp. (millet, ISTA (2018), Table 2A). Immediately after sampling, submitted samples should be packed and sealed in an appropriate bag or container protected from contamination or leaking, with clear labels on seed lot, crop species and associated information to allow sample traceability. When a small package is less than 25 000 seeds, an appropriate bag sampling procedure should be performed after determining how many bags are equivalent to 25 000 seeds. When the whole lot is less than 25 000 seeds, the	C	**European Union** This paragraphe is absolutely unclear. It should be rewritten to provide the appropriate guidance for sampling. Information should be provided on the volume of soil to form the most representative sample in the field survey should be indicated. The ISTA reference should be replaced by ISTA 2019. *Category : SUBSTANTIVE*	**Modified** This section has been modified as per country comments. **Considered but not incorporated** However, in the DP we just refer to the lab sample for phytosanitary purposes. The TPDP also agreed to consider the same approach to the text in DP 19 *Sorghum halepense*

		whole lot should be examined without sub-sampling procedures.			
115	85	Samples submitted to a laboratory should be drawn from a composite sample, which is a mixture of primary samples. The sample size recommended by the International Seed Testing Association is 25 000 seeds or a maximum of 1 kg sample (ISTA, 2018). The weight of 25 000 seeds can be referenced from International Seed Testing Rule Table 2A (ISTA, 2018), or determined by the laboratory with a thousand-seed weight test. For example, the weight of 25 000 seeds will be 1 kg for *Z. mays*, *O. sativa* and *Hordeum vulgare* and 20 g for *Panicum* spp. (millet, ISTA (2018), Table 2A). Immediately after sampling, submitted samples should be packed and sealed in an appropriate bag or container protected from contamination or leaking, with clear labels on seed lot, crop species and associated information to allow sample traceability. When a small package is less than 25 000 seeds, an appropriate bag sampling procedure should be performed after determining how many bags are equivalent to 25 000 seeds. When the whole lot is less than 25 000 seeds, the whole lot should be examined without sub-sampling procedures.	C	**Argentina** As per general comment, we suggest to simplify the description of the sampling procedure *Category : TECHNICAL*	**Modified** Sections 3.1 and 3.2 have been edited and simplified as per country comments.
116	85	~~Samples submitted to a laboratory should be drawn from a composite sample, which is a mixture of primary samples. The sample size recommended by the International Seed Testing Association is 25 000 seeds or a maximum of 1 kg sample (ISTA, 2018). The weight of 25 000 seeds can be referenced from International Seed Testing Rule Table 2A (ISTA, 2018), or determined by the laboratory with a thousand-seed weight test. For example, the weight of 25 000 seeds will be 1 kg for *Z. mays*, *O. sativa* and *Hordeum vulgare* and 20 g for *Panicum* spp. (millet, ISTA (2018), Table 2A). Immediately after sampling, submitted samples should be packed and~~	P	**Japan** Paragraph 84 - 86 are the prcess of sampling under the International Seed Testing Association (ISTA). International Seed Testing Rules Table 2A (ISTA, 2018)describes the sample size to inspect all sampled seeds (e.g. germination, disease, moisture) comprehensively. The rule does not apply for detection of Striga seeds contamination from imported consignments of seeds or grains. The sample size for inspection of Striga seeds from consignments should be decided in accordance with ISPM31. *Category : SUBSTANTIVE*	**Modified** Sections 3.1 and 3.2 have been edited and simplified as per country comments.

		~~sealed in an appropriate bag or container protected from contamination or leaking, with clear labels on seed lot, crop species and associated information to allow sample traceability. When a small package is less than 25 000 seeds, an appropriate bag sampling procedure should be performed after determining how many bags are equivalent to 25 000 seeds. When the whole lot is less than 25 000 seeds, the whole lot should be examined without sub-sampling procedures.~~			
117	85	Samples submitted to a laboratory should be drawn from a composite sample, which is a mixture of primary samples. The sample size recommended by the International Seed Testing Association is 25 000 seeds or a maximum of 1 kg sample (ISTA, 2018). The weight of 25 000 seeds can be referenced from International Seed Testing Rule Table 2A (ISTA, 2018), or determined by the laboratory with a thousand-seed weight test. For example, the weight of 25 000 seeds will be 1 kg for *Z. mays*, *O. sativa* and *Hordeum vulgare* and 20 g for *Panicum* spp. (millet, ISTA (2018), Table 2A). Immediately after sampling, submitted samples should be packed and sealed in an appropriate bag or container protected from contamination or leaking, with clear labels on seed lot, crop species and associated information to allow sample traceability. When a small package is less than 25 000 seeds, an appropriate bag sampling procedure should be performed after determining how many bags are equivalent to 25 000 seeds. When the whole lot is less than 25 000 seeds, the whole lot should be examined without sub-sampling procedures.	C	**EPPO** This paragraphe is absolutely unclear it should be rewritten to provide the appropriate guidance for sampling. Information should be provided on the volume of soil to form the most representative sample in the field survey should be indicared The ISTA reference should be repalced by ISTA 2019 *Category : SUBSTANTIVE*	Same comment as 114
118	85	Samples submitted to a laboratory should be drawn from a composite sample, which is a mixture of primary samples. The sample size recommended by the International Seed Testing Association is 25 000	C	**Uruguay** We suggest the TPDP to simplify the description of the sampling procedure as per our general comment *Category : SUBSTANTIVE*	**Modified** Sections 3.1 and 3.2 have been edited and simplified as per country comments.

		seeds or a maximum of 1 kg sample (ISTA, 2018). The weight of 25 000 seeds can be referenced from International Seed Testing Rule Table 2A (ISTA, 2018), or determined by the laboratory with a thousand-seed weight test. For example, the weight of 25 000 seeds will be 1 kg for *Z. mays*, *O. sativa* and *Hordeum vulgare* and 20 g for *Panicum* spp. (millet, ISTA (2018), Table 2A). Immediately after sampling, submitted samples should be packed and sealed in an appropriate bag or container protected from contamination or leaking, with clear labels on seed lot, crop species and associated information to allow sample traceability. When a small package is less than 25 000 seeds, an appropriate bag sampling procedure should be performed after determining how many bags are equivalent to 25 000 seeds. When the whole lot is less than 25 000 seeds, the whole lot should be examined without sub-sampling procedures.			
119	85	Samples submitted to a laboratory should be drawn from a composite sample, which is a mixture of primary samples. The sample size recommended by the International Seed Testing Association is 25 000 seeds or a maximum of 1 kg sample (ISTA, 2018). The weight of 25 000 seeds can be referenced from International Seed Testing Rule Table 2A (ISTA, 2018), or determined by the laboratory with a thousand-seed weight test. For example, the weight of 25 000 seeds will be 1 kg for *Z. mays*, *O. sativa* and *Hordeum vulgare* and 20 g for *Panicum* spp. (millet, ISTA (2018), Table 2A). Immediately after sampling, submitted samples should be packed and sealed in an appropriate bag or container protected from contamination or leaking, with clear labels on seed lot, crop species and associated information to allow sample traceability. When a small package is less than 25 000 seeds, an appropriate bag sampling	C	**Gambia** When the whole lot is less than 25◦000 seeds, the whole lot should be examined without sub-sampling procedures, provided that its weight is not significantly less than the minimum sample weight *Category : TECHNICAL*	**Modified** Sections 3.1 and 3.2 have been edited and simplified as per country comments.

		procedure should be performed after determining how many bags are equivalent to 25 000 seeds. When the whole lot is less than 25 000 seeds, the whole lot should be examined without sub-sampling procedures.			
120	85	Samples submitted to a laboratory should be drawn from a composite sample, which is a mixture of primary samples. The sample size recommended by the International Seed Testing Association is 25 000 seeds or a maximum of 1 kg sample (ISTA, 2018). The weight of 25 000 seeds can be referenced from International Seed Testing Rule Table 2A (ISTA, 2018), or determined by the laboratory with a thousand-seed weight test. For example, the weight of 25 000 seeds will be 1 kg for *Z. mays*, *O. sativa* and *Hordeum vulgare* and 20 g for *Panicum* spp. (millet, ISTA (2018), Table 2A). Immediately after sampling, submitted samples should be packed and sealed in an appropriate bag or container protected from contamination or leaking, with clear labels on seed lot, crop species and associated information to allow sample traceability. When a small package is less than 25 000 seeds, an appropriate bag sampling procedure should be performed after determining how many bags are equivalent to 25 000 seeds. When the whole lot is less than 25 000 seeds, the whole lot should be examined without sub-sampling procedures.	C	**Peru** De acuerdo al comentario general, se sugiere simplificar la descripción del procedimiento de muestreo. *Category : SUBSTANTIVE*	**Modified** Sections 3.1 and 3.2 have been edited and simplified as per country comments.
121	85	Samples submitted to a laboratory should be drawn from a composite sample, which is a mixture of primary samples. The sample size recommended by the International Seed Testing Association is 25 000 seeds or a maximum of 1 kg sample (ISTA, 2018). The weight of 25 000 seeds can be referenced from International Seed Testing Rule Table 2A (ISTA, 2018), or determined by the laboratory with a thousand-seed weight test. For example, the weight	C	**COSAVE** De acuerdo a nuestro comentario general se sugiere simplificar la descripción del procedimiento de muestreo As per general comment, we suggest to simplify the description of the sampling procedure *Category : SUBSTANTIVE*	**Modified** Sections 3.1 and 3.2 have been edited and simplified as per country comments.

		of 25 000 seeds will be 1 kg for *Z. mays*, *O. sativa* and *Hordeum vulgare* and 20 g for *Panicum* spp. (millet, ISTA (2018), Table 2A). Immediately after sampling, submitted samples should be packed and sealed in an appropriate bag or container protected from contamination or leaking, with clear labels on seed lot, crop species and associated information to allow sample traceability. When a small package is less than 25 000 seeds, an appropriate bag sampling procedure should be performed after determining how many bags are equivalent to 25 000 seeds. When the whole lot is less than 25 000 seeds, the whole lot should be examined without sub-sampling procedures.			
122	86	When receiving a submitted sample, the laboratory should ~~analyse~~ test a minimum of 25 000 seeds of the commodity, which may or may not constitute the whole submitted sample. If the submitted sample is more than the minimum sample weight, ~~the~~ a working sample ~~weight should~~ must be ~~reduced to the minimum quantity~~ obtained using a mechanical sample divider (e.g. a rotary or soil divider) or by stirring the composite sample with a ~~hand halving method~~spoon, taking a minimum of three subsamples with a spoon from different positions and combining them to create the subsample of the required size. The sample should be rejected when its weight is significantly less than the minimum sample weight.The working sample to be tested must be weighed in grams to the minimum number of decimal places indicated in Table 4.1 of the ISTA International Rules for Seed Testing (for samples weighing less than 1.0000 g, 4 decimal places; for samples between 1.000 and 9.999 g, 3 decimal places; for samples between 100.0 and 999.9 g, 1 decimal place and for samples weighing more than 1000 g, 0 decimal place).	P	**Brazil** We are suggesting these changes because ISTA recommends the "spoon method" instead of the "hand halving method" to obtain the submitted subsample (working sample) for Striga determination and also alerts that the submitted subsamples must be weighed in grams to the minimum number of decimal places indicated in Table 4.1 of the ISTA International Rules for Seed Testing (2019). *Category : TECHNICAL*	**Considered but not incorporated** Paragraph 86 has been deleted. *Striga* seeds are tiny, mainly distributed at the bottom of the sample, hand halving is more practical and do not require special devices (a rule will do the work). While the spoon method has to use a spoon with a special design, e.g., straight edge touching sample, which may be hard to find or not be fully understood outside of seed testing lab. Since we stated hand halving is an example, other appropriate methods are not excluded. ISTA recommendation is more general, but here is more relevant to *Striga* seeds.

123	86	When receiving a submitted sample, the laboratory should analyse a minimum of 25 000 seeds of the commodity, which may or may not constitute the whole submitted sample. If the submitted sample is more than the minimum sample weight, the sample weight should be reduced to the minimum quantity using a mechanical sample divider (e.g. a rotary or soil divider) or by a hand-halving method. The sample should be rejected when its weight is significantly less than the minimum sample weight.	C	**European Union** A mechanical sample (seed) divider should not be used as the use of the divider may contaminate the machinary (a seed divider is also not used for the determination of the health of seeds). E.g. in certain countries, if a larger sample is received the sample is divided by hand only. *Category : TECHNICAL*	**Modified** Paragraph 86 has been deleted. A mechanical sample divider can be used as one of the options with an appropriate decontamination procedure the same as other devices used in the test. However, cleaning mechanical sample divider may require more efforts and so the paragraph has been deleted.
124	86	When receiving a submitted sample, the laboratory should analyse a minimum of 25 000 seeds of the commodity, which may or may not constitute the whole submitted sample. If the submitted sample is more than the minimum sample weight, the sample weight should be reduced to the minimum quantity using a mechanical sample divider (e.g. a rotary or soil divider) or by a hand-halving method. The sample should be rejected when its weight is significantly less than the minimum sample weight.	C	**European Union** The text in different parts mentions submitted samples, working samples, samples. This should be harmonized. *Category : SUBSTANTIVE*	**Modified** See answer to comment 123
125	86	~~When receiving a submitted sample, the laboratory should analyse a minimum of 25 000 seeds of the commodity, which may or may not constitute the whole submitted sample. If the submitted sample is more than the minimum sample weight, the sample weight should be reduced to the minimum quantity using a mechanical sample divider (e.g. a rotary or soil divider) or by a hand-halving method. The sample should be rejected when its weight is significantly less than the minimum sample weight.~~	P	**Japan** Paragraph 84 - 86 are the prcess of sampling under the International Seed Testing Association (ISTA). International Seed Testing Rules Table 2A (ISTA, 2018) describes the sample size to inspect all sampled seeds (e.g. germination, disease, moisture) comprehensively. The rule does not apply for detection of Striga seeds contamination from imported consignments of seeds or grains. The sample size for inspection of Striga seeds from consignments should be decided in accordance with ISPM31. *Category : SUBSTANTIVE*	**Modified** See answer to comment 123
126	86	When receiving a submitted sample, the laboratory should analyse a minimum of 25 000 seeds of the commodity, which may or may not constitute the whole submitted sample. If the submitted sample is more than the minimum sample weight, the sample weight should be reduced to the minimum quantity using a mechanical sample divider (e.g. a rotary or	C	**EPPO** A mechanical sample (seed) divider should not be used as the use of the divider may contaminate the machinary (a seed divider is also not used for the determination of the health of seeds). E.g. in Israel if a larger sample is received the sample is divided by hand only. *Category : TECHNICAL*	**Modified** See answer to comment 123

		soil divider) or by a hand-halving method. The sample should be rejected when its weight is significantly less than the minimum sample weight.			
127	86	When receiving a submitted sample, the laboratory should analyse a minimum of 25 000 seeds of the commodity, which may or may not constitute the whole submitted sample. If the submitted sample is more than the minimum sample weight, the sample weight should be reduced to the minimum quantity using a mechanical sample divider (e.g. a rotary or soil divider) or by a hand-halving method. The sample should be rejected when its weight is significantly less than the minimum sample weight.	C	**EPPO** The text in different parts mentions submitted samples, working samples, samples. This should be harmonized. *Category : SUBSTANTIVE*	**Modified** See answer to comment 123
128	86	When receiving a submitted sample, the laboratory should analyse a minimum of 25 000 seeds of the commodity, which may or may not constitute the whole submitted sample. If the submitted sample is more than the minimum sample weight, the sample weight should be reduced to the minimum quantity using a mechanical sample divider (e.g. a rotary or soil divider) or by a hand-halving method. The sample should be rejected when its weight is significantly less than the minimum sample weight.	C	**Indonesia** Indonesia seek more clarification on the last sentence: significantly less than the minimum sample weight ? *Category : TECHNICAL*	**Modified** See answer to comment 123
129	86	When receiving a submitted sample, the laboratory should analyse a minimum of 25 000 seeds of the commodity, which may or may not constitute the whole submitted sample. If the submitted sample is more than the minimum sample weight, the sample weight should be reduced to the minimum quantity using a mechanical sample divider (e.g. a rotary or soil divider) or by a hand-halving method. The sample should be rejected when its weight is significantly less than the minimum sample weight.	C	**COSAVE** Consignment lots is redundant as per definition in ISPM 5. Text simplified for a better reading. Last sentence moved from first paragraph of section 3.1 *Category : SUBSTANTIVE*	**Considered but not incorporated** The comment seems not in line with this paragraph 86, but concerns paragraph 83, see comment 102.
3.2 Detection method for seeds of Striga species					
130	87	**3.2 Detection method for seeds of *Striga* species**	C	**European Union** Add information relevant for soil testing: 3.2.3 Saturated solutions The method of saturated solutions is based on the difference of the specific gravity of the mineral and organic	**Considered but not incorporated** This protocol is under IPPC, meaning for international trade. Soil is generally not allowed in export commodities. If this is for a field

				part of the soil. The average soil sample is poured into the prepared solution (mixtures of bromoform and diethyl ether in 4 parts, by volume with the addition of water so that the specific gravity is 1.7, or use a potash solution with a specific gravity of 1.57 (530 g per 1 l of water) or zinc chloride with a specific gravity of 1.96 (700 g per 1 l of water)), carefully shaken and stirred with a glass rod, with the mineral particles settling to the bottom, and organic weed seeds float to the surface. This method is specified in the national standard of certain countries. *Category : SUBSTANTIVE*	survey, I would ask the source of the method as a reference or valid method.
131	87	**3.2 Detection method for seeds of *Striga* species**	C	**EPPO** Add information relevant for soil testing 3.2.3 Saturated solutions The method of saturated solutions is based on the difference of the specific gravity of the mineral and organic part of the soil. The average soil sample is poured into the prepared solution (mixtures of bromoform and diethyl ether in 4 parts, by volume with the addition of water so that the specific gravity is 1.7, or use a potash solution with a specific gravity of 1.57 (530 g per 1 l of water) or zinc chloride with a specific gravity of 1.96 (700 g per 1 l of water)), carefully shaken and stirred with a glass rod, with the mineral particles settling to the bottom, and organic weed seeds float to the surface. This method is specified in the national standard of Ukraine *Category : SUBSTANTIVE*	**see answer to comment 130**
132	88	The analysis of the working sample for the presence of *Striga* seeds is achieved by either washing and filtration or by dry sieving the working sample. Note that according to ISTA (2019), both methods are not suitable for use on treated, coated or pelleted seeds.	P	**Brazil** this is a recommendation stated in the ISTA International Rules for Seed Testing (2019) to avoid any incorrect use of the tests for the determination of Striga. With treated seed the treatment can cover and mask the characters of the seed and the seeds are so tiny that they are difficult to distinguish from other inert matter that is also covered by treatment. With coated seed the seeds are so tiny they are most likely washed away with the coating material. *Category : TECHNICAL*	**Modified**
133	88	The analysis of the working sample for the presence of *Striga* seeds is achieved by either washing and filtration or by dry sieving the working sample.	C	**China** The description how to separate Striga seeds from samples is too simple. It needs to be specified in how to separate from large sample samples or from soil, such as how size sieves or bags to use for sample washing. Striga seeds are very tiny. So how to separate from large sample samples or from soil, such as how size sieves or	**Considered but not incorporated** The method recommended here is based on published methods. Sieves only need to be large enough to allow *Striga* seeds to pass. Further separation of *Striga* seeds and soil

				bags to use for sample washing, need to be specified in detail. *Category : SUBSTANTIVE*	particles cannot rely on sieves, but microscopic examination of the materials. The protocol provided an example in 3.3.2. The lab needs to select the correct device or tools to separate samples under analysis based on the sample type and contamination level. There is no universal method for all samples. The principle of the separation is also stated at 3.3.2 "The size of the holes in the screen- should be adequate to retain the commodity seeds on top and allow the finer dust-like material, including *Striga* seeds, to go through to the collection tray."
134	89	After washing or sieving, the filter paper, sieves and screenings should be carefully examined with a stereo microscope of at least 40× magnification. A clean soft brush may be used to transfer the screenings into a suitable container (e.g. Petri dish), making sure there are no remaining seeds in the brush or the collecting pan.	C	**Brazil** According to ISTA (2019), the minimum acceptable magnification of a microscope to be used for Striga determination is x10. In ISTA audits, the use of soft brushes is not allowed to clean seeds with bigger sizes than Striga because the electrostatic effect between the seeds and the brush may difficult its complete cleaning, which may cross contaminate samples. *Category : TECHNICAL*	**Considered but not incorporated** At least 40x is used in many labs. Higher magnification could be used, such as 100x. 40x as the minimum requirement**.** The text on the use of a soft brush has been modified for clarity.
135	89	After washing or sieving, the filter paper, sieves and screenings should be carefully examined with a stereo microscope of at least 40× magnification. A clean soft brush may be used to transfer the screenings into a suitable container (e.g. Petri dish), making sure there are no remaining seeds in the brush or the collecting pan.	C	**European Union** Better examined with a stereo microscope of at least 100× magnification. *Category : TECHNICAL*	**Considered but not incorporated** At least 40x is used in many labs. Higher magnification could be used, such as 100x. 40x as the minimum requirement**.**
136	89	After washing or sieving, the filter paper, sieves and screenings should be carefully examined with a stereo microscope of at least 40× magnification. A clean soft brush may be used to transfer the screenings into a suitable container (e.g. Petri dish), making sure there are no remaining seeds in the brush or the collecting pan.	C	**EPPO** Better examined with a stereo microscope of at least 100× magnification *Category : TECHNICAL*	**see answer to comment 135**
137	89	After washing or sieving, the filter paper, sieves and screenings should be carefully examined with a stereo microscope of at least 40× magnification. A clean soft brush may be used to transfer the screenings into a suitable container (e.g. Petri dish),	C	**Gambia** A clean soft brush may be used to transfer the screenings into a suitable container (e.g. Petri dish), making sure there are no remaining seeds in the brush or the collecting pan. Use of water could be more appropriate to ensure effective transfer of screenings instead of clean soft brush as the	**Modified** The text has been modified for clarity.

		making sure there are no remaining seeds in the brush or the collecting pan.		seeds are so small and the chance of them remaining on the brush is high *Category : TECHNICAL*	
3.2.1 Washing and filtration					
138	91	The whole sample is washed in water, the wash water filtered, and the residue collected on the surface of a filter paper (15 cm diameter), which is then analysed. The seed weight-to-water volume ratio should be 1:2; for example, 250 g of seed added to 500 mL of water containing one or two drops of surfactant. Large submitted samples may require washing in small batches but the whole sample should be analysed.	C	**European Union** It is necessary to clarify which surfactant should be used. *Category : SUBSTANTIVE*	**Modified** Surfactant is to release the surface tension to speed up the filtration. The detection of *Striga* seeds is not a chemical process. Different types of surfactants will not impact the result of the detection. Any type of surfactant can be used here with the lab's preference or local availability. It is unnecessary to specify the types. Here we refer a transfer of sample, sample can be transferred without a tool assistance
139	91	The whole sample is washed in water, the wash water filtered, and the residue collected on the surface of a filter paper (15 cm diameter), which is then analysed. The seed weight-to-water volume ratio should be 1:2; for example, 250 g of seed added to 500 mL of water containing one or two drops of surfactant. Large submitted samples may require washing in small batches but the whole sample should be analysed.	C	**European Union** This paragraph comes from ISTA protocol Chapter 4: Determination of other seeds by number Point 4.5.3.3. In Israel the washed in water system is used but instead of filter paper permemant filters are used– The top filter has a diameter of 21cm and holes that change according to the size of the seeds being tested – usually of 500 microns and a bottom filter which is 11cm in diameter is made of two layers PVC covering and nylon with holes of 100-120 microns. We recommend that this system should be added and in any case the filtering system should not be confined to the use of filter paper only. Illustration can be provided by an Israelian expert or EPPO on request. *Category : TECHNICAL*	**Modified** The TPDP agreed to incorporate the method used in Israel that was provided by the EPPO Secretariat as an example.
140	91	The whole sample is washed in water, the wash water filtered, and the residue collected on the surface of a filter paper (15 cm diameter), which is then analysed. The seed weight-to-water volume ratio should be 1:2; for example, 250 g of seed added to 500 mL of water containing one or two drops of surfactant. Large submitted samples may require washing in small batches but the whole sample should be analysed.	C	**European Union** To facilitate detection of Striga seeds in soil sample, the soil is air dried using a thermostat or a dry air cabinet. A washing method, is subsequently performed to allow the seeds to be suspended and then collected on the surface. *Category : TECHNICAL*	**Modified** The sample needs to be washed, how to wash and collect will depend on the sample type. Text modified in this section to add for soil samples
141	91	The whole sample is washed in water, the wash water filtered, and the residue collected on the	C	**EPPO** It is necessary to clarify which surfactant should be	**Same comment as 138**

		surface of a filter paper (15 cm diameter), which is then analysed. The seed weight-to-water volume ratio should be 1:2; for example, 250 g of seed added to 500 mL of water containing one or two drops of surfactant. Large submitted samples may require washing in small batches but the whole sample should be analysed.		*Category : SUBSTANTIVE*	
142	91	The whole sample is washed in water, the wash water filtered, and the residue collected on the surface of a filter paper (15 cm diameter), which is then analysed. The seed weight-to-water volume ratio should be 1:2; for example, 250 g of seed added to 500 mL of water containing one or two drops of surfactant. Large submitted samples may require washing in small batches but the whole sample should be analysed.	C	**EPPO** This paragraph comes from ISTA protocol Chapter 4: Determination of other seeds by number Point 4.5.3.3. In Israel the washed in water system is used but instead of filter paper permemant filters are used– The top filter has a diameter of 21cm and holes that change according to the size of the seeds being tested – usually of 500 microns and a bottom filter which is 11cm in diameter is made of two layers PVC covering and nylon with holes of 100-120 microns. We recommed that this system should be added and in any case the filtering system should not be confined to the use of filter paper only. An illustration provided by Israelian experts can be provided by the EPPO Secretariat *Category : TECHNICAL*	**same comment as 139**
143	91	The whole sample is washed in water, the wash water filtered, and the residue collected on the surface of a filter paper (15 cm diameter), which is then analysed. The seed weight-to-water volume ratio should be 1:2; for example, 250 g of seed added to 500 mL of water containing one or two drops of surfactant. Large submitted samples may require washing in small batches but the whole sample should be analysed.	C	**EPPO** To facilitate detection of Striga seeds in soil sample, the soil is air dried using a thermostat or a dry air cabinet. A washing method, is subsequently performed to allow the seeds to be suspended and then collected on the surface. *Category : TECHNICAL*	**same comment as 140**
144	91	The whole sample is washed in water, the wash water filtered, and the residue collected on the surface of a filter paper disk (15 cm diameter), which is then analysed. The seed weight-to-water volume ratio should be 1:2; for example, 250 g of seed added to 500 mL of water containing one or two drops of surfactant. Large submitted samples may require washing in small batches but the whole sample should be analysed.	P	**United States of America** For clarity *Category : TECHNICAL*	**Considered but not incorporated:** No need to add "disk" since it could vary among different filtering systems.

145	91	The whole sample is washed in water, the wash water filtered, and the residue collected on the surface of a filter paper (15 cm diameter), which is then analysed. The seed weight-to-water volume ratio should be 1:2; for example, 250 g of seed added to 500 mL of water containing one or two drops of surfactant. Large submitted samples may require washing in small batches but the whole sample should be analysed.	C	**China** The kinds of surfactants need to be indicated. Different surfactants have different function. *Category : TECHNICAL*	**Modified** See answer to comment as 138
3.2.2 Dry sieving					
146	92	**3.2.2 Dry sieving**	P	**Ghana** *Category : EDITORIAL*	**Considered but not incorporated** Cannot see the suggested editorial
147	93	The whole submitted subsample is "dry" sieved using a sieve (250 µm and 150 µm sieves: 150 µm sieve for clean *Striga* seeds, 250 µm sieve for *Striga* seeds and debris) and a bottom collection tray that is shaken by a mechanical shaker (e.g. 40 shakes/second for at least two minutes) or shaken manually. If the shaking is manual, the sample should be shaken vigorously ~~for a longer period~~ until the finer material is fully separated. The size of the holes in the screen-sieve should be adequate to retain the commodity seeds on top and allow the finer dust-like material including *Striga* seeds to go through to the collection tray. The same technology could be used for separation of *Striga* seeds from flour using a sieve of mesh size 70–100 µm. In such situations it is expected that the seeds are retained on top of the sieve and the flour particles allowed to go through to the collection tray.	P	**European Union** Delete 'for a longer period' (line 4) as this is not needed since the final objective is described (until the finer material is fully separated). *Category : EDITORIAL*	**Considered but not incorporated** It illustrates the expectation, it requires longer than normal for dust-like seeds.
148	93	The whole submitted subsample is "dry" sieved using a sieve (250 µm and 150 µm sieves: 150 µm sieve for clean *Striga* seeds, 250 µm sieve for *Striga* seeds and debris) and a bottom collection tray that is shaken by a mechanical shaker (e.g. 40 shakes/second for at least two minutes) or shaken	C	**European Union** If the shaking is manual, the sample should be shaken vigorously over a longer period (if possible indicate the appropriate oscillation frequency during manual shaking). *Category : TECHNICAL*	**Considered but not incorporated** It is not necessary since the crops or commodities are varied. The frequency and thoroughness of the sieving will depend on sample types, weights, and sieves used.

		manually. If the shaking is manual, the sample should be shaken vigorously for a longer period until the finer material is fully separated. The size of the holes in the screen-sieve should be adequate to retain the commodity seeds on top and allow the finer dust-like material including *Striga* seeds to go through to the collection tray. The same technology could be used for separation of *Striga* seeds from flour using a sieve of mesh size 70–100 µm. In such situations it is expected that the seeds are retained on top of the sieve and the flour particles allowed to go through to the collection tray.			
149	93	The whole ~~submitted subsample~~ sample is "dry" sieved using a sieve (250 µm and 150 µm sieves: 150 µm sieve for clean *Striga* seeds, 250 µm sieve for *Striga* seeds and debris) and a bottom collection tray that is shaken by a mechanical shaker (e.g. 40 shakes/second for at least two minutes) or shaken manually. If the shaking is manual, the sample should be shaken vigorously for a longer period until the finer material is fully separated. The size of the holes in the screen-sieve should be adequate to retain the commodity seeds on top and allow the finer dust-like material including *Striga* seeds to go through to the collection tray. The same technology could be used for separation of *Striga* seeds from flour using a sieve of mesh size 70–100 µm. In such situations it is expected that the seeds are retained on top of the sieve and the flour particles allowed to go through to the collection tray.	P	**Argentina** For consistency *Category : TECHNICAL*	**Modified** Added working sample, to distinguish submitted samples. It was changed to "working sample" (i.e., 1kg or 500g in normal case)
150	93	The whole submitted subsample is "dry" sieved using a sieve (250 µm and 150 µm sieves: 150 µm sieve for clean *Striga* seeds, 250 µm sieve for *Striga* seeds and debris) and a bottom collection tray that is shaken by a mechanical shaker (e.g. 40 shakes/second for at least two minutes) or shaken manually. If the shaking is manual, the sample should be shaken vigorously for a longer period	C	**EPPO** Delete 'for a longer period (line 4) this is not needed as the final objective is described (until the finer material is fully separated) *Category : EDITORIAL*	**see answer to comment 147**

		until the finer material is fully separated. The size of the holes in the screen-sieve should be adequate to retain the commodity seeds on top and allow the finer dust-like material including *Striga* seeds to go through to the collection tray. The same technology could be used for separation of *Striga* seeds from flour using a sieve of mesh size 70–100 µm. In such situations it is expected that the seeds are retained on top of the sieve and the flour particles allowed to go through to the collection tray.			
151	93	The whole submitted subsample is "dry" sieved using a sieve (250 µm and 150 µm sieves: 150 µm sieve for clean *Striga* seeds, 250 µm sieve for *Striga* seeds and debris) and a bottom collection tray that is shaken by a mechanical shaker (e.g. 40 shakes/second for at least two minutes) or shaken manually. If the shaking is manual, the sample should be shaken vigorously for a longer period until the finer material is fully separated. The size of the holes in the screen-sieve should be adequate to retain the commodity seeds on top and allow the finer dust-like material including *Striga* seeds to go through to the collection tray. The same technology could be used for separation of *Striga* seeds from flour using a sieve of mesh size 70–100 µm. In such situations it is expected that the seeds are retained on top of the sieve and the flour particles allowed to go through to the collection tray.	C	**EPPO** If the shaking is manual, the sample should be shaken vigorously over a longer period (if possible indicate the appropriate oscillation frequency during manual shaking) *Category : TECHNICAL*	**see answer to comment 148**
152	93	The whole ~~submitted subsample~~ sample is "dry" sieved using a sieve (250 µm and 150 µm sieves: 150 µm sieve for clean *Striga* seeds, 250 µm sieve for *Striga* seeds and debris) and a bottom collection tray that is shaken by a mechanical shaker (e.g. 40 shakes/second for at least two minutes) or shaken manually. If the shaking is manual, the sample should be shaken vigorously for a longer period until the finer material is fully separated. The size of	P	**Uruguay** For consistency *Category : TECHNICAL*	**Modified** see answer to comment 149

		the holes in the screen-sieve should be adequate to retain the commodity seeds on top and allow the finer dust-like material including *Striga* seeds to go through to the collection tray. The same technology could be used for separation of *Striga* seeds from flour using a sieve of mesh size 70–100 µm. In such situations it is expected that the seeds are retained on top of the sieve and the flour particles allowed to go through to the collection tray.			
153	93	The whole ~~submitted subsample~~ sample is "dry" sieved using a sieve (250 µm and 150 µm sieves: 150 µm sieve for clean *Striga* seeds, 250 µm sieve for *Striga* seeds and debris) and a bottom collection tray that is shaken by a mechanical shaker (e.g. 40 shakes/second for at least two minutes) or shaken manually. If the shaking is manual, the sample should be shaken vigorously for a longer period until the finer material is fully separated. The size of the holes in the screen-sieve should be adequate to retain the commodity seeds on top and allow the finer dust-like material including *Striga* seeds to go through to the collection tray. The same technology could be used for separation of *Striga* seeds from flour using a sieve of mesh size 70–100 µm. In such situations it is expected that the seeds are retained on top of the sieve and the flour particles allowed to go through to the collection tray.	P	**Peru** Para mayor consistencia. *Category : TECHNICAL*	**Modified** see answer to comment 149
154	93	The whole submitted subsample is "dry" sieved using a sieve (250 µm and 150 µm sieves: 150 µm sieve for clean *Striga* seeds, 250 µm sieve for *Striga* seeds and debris) and a bottom collection tray that is shaken by a mechanical shaker (e.g. 40 shakes/second for at least two minutes) or shaken manually. If the shaking is manual, the sample should be shaken vigorously for a longer period until the finer material is fully separated. The size of the holes in the screen-sieve should be adequate to retain the commodity seeds on top and allow the	C	**China** The static factors need to be considered. During the screening process, crop seeds may produce electrostatically adhered striga seeds. Is there any antistatic measures? *Category : TECHNICAL*	**Modified** Text updated to include anti-static measure

		finer dust-like material including *Striga* seeds to go through to the collection tray. The same technology could be used for separation of *Striga* seeds from flour using a sieve of mesh size 70–100 µm. In such situations it is expected that the seeds are retained on top of the sieve and the flour particles allowed to go through to the collection tray.			
155	93	The whole submitted subsample is "dry" sieved using a sieve (250 µm and 150 µm sieves: 150 µm sieve for clean *Striga* seeds, 250 µm sieve for *Striga* seeds and debris) and a bottom collection tray that is shaken by a mechanical shaker (e.g. 40 shakes/second for at least two minutes) or shaken manually. If the shaking is manual, the sample should be shaken vigorously for a longer period until the finer material is fully separated. The size of the holes in the screen-sieve should be adequate to retain the commodity seeds on top and allow the finer dust-like material including *Striga* seeds to go through to the collection tray. The same technology could be used for separation of *Striga* seeds from flour using a sieve of mesh size 70–100 µm. In such situations it is expected that the seeds are retained on top of the sieve and the flour particles allowed to go through to the collection tray.	C	**China** There are only 2 kinds of sieves, that may not meet the needs of the experiment. Submitted samples, such as crop seeds, we should gradually removed from crop seeds, impurities, etc. through sieves of different sizes. *Category : TECHNICAL*	**Modified** New options to allow sub-samples to sieve separately have been added.
156	93	The whole submitted subsample is "dry" sieved using a sieve (250 µm and 150 µm sieves: 150 µm sieve for clean *Striga* seeds, 250 µm sieve for *Striga* seeds and debris) and a bottom collection tray that is shaken by a mechanical shaker (e.g. 40 shakes/second for at least two minutes) or shaken manually. If the shaking is manual, the sample should be shaken vigorously for a longer period until the finer material is fully separated. The size of the holes in the screen-sieve should be adequate to retain the commodity seeds on top and allow the finer dust-like material including *Striga* seeds to go	C	**COSAVE** For consistency *Category : TECHNICAL*	**Considered but not incorporated** comment not expressed and not visible in the text

		through to the collection tray. The same technology could be used for separation of *Striga* seeds from flour using a sieve of mesh size 70–100 µm. In such situations it is expected that the seeds are retained on top of the sieve and the flour particles allowed to go through to the collection tray.			
157	93	The whole ~~submitted subsample~~ sample is "dry" sieved using a sieve (250 µm and 150 µm sieves: 150 µm sieve for clean *Striga* seeds, 250 µm sieve for *Striga* seeds and debris) and a bottom collection tray that is shaken by a mechanical shaker (e.g. 40 shakes/second for at least two minutes) or shaken manually. If the shaking is manual, the sample should be shaken vigorously for a longer period until the finer material is fully separated. The size of the holes in the screen-sieve should be adequate to retain the commodity seeds on top and allow the finer dust-like material including *Striga* seeds to go through to the collection tray. The same technology could be used for separation of *Striga* seeds from flour using a sieve of mesh size 70–100 µm. In such situations it is expected that the seeds are retained on top of the sieve and the flour particles allowed to go through to the collection tray.	P	**COSAVE** *Category : TECHNICAL*	**Modified** see answer to comment 149
4.1 Identification method					
158	95	**4.1 Identification method**	C	**China** It is suggested to add modern molecular marker identification methods, such as bio-barcode. It may refer to ISPM 27 Diagnostic protocols for regulated pests DP 19: Sorghum halepense. The means of identification need to be diversified and should be more accurate. It is suggested to add modern molecular marker identification methods, such as bio-barcode. *Category : SUBSTANTIVE*	**Considered but not incorporated** As in the text, considerable data from molecular studies of Striga are available and can be helpful for species determination, but until methods can be simplified and uniform, they are of limited value for phytosanitary purposes.
159	96	Classification and identification of *Striga* species depends largely on floral characters. Inspection, however, usually targets seeds of imported agricultural commodities such as grain, seeds and feed, which are suspected to be contaminated with *Striga* seeds. *Striga* seeds can contaminate seeds or	C	**European Union** What is mean with 'Striga seeds can contaminate seeds or grain by multiple pathways via transportation, storage and trade' ? Why is it needed in this section ? *Category : TECHNICAL*	**Modified** The TPDP agreed to delete the sentence on pathways from this section and move it under Section 1 Pest Information as it is more relevant there

		grain by multiple pathways via transportation, storage and trade. Morphological identification of *Striga* seeds or plants is based on known reference specimens, literature descriptions and taxonomic identification keys. Considerable data from molecular studies of *Striga* are available and could be helpful for species determination, but until methods can be simplified and uniform they are of limited value for phytosanitary purposes.			
160	96	Classification and identification of *Striga* species depends largely on floral characters. Inspection, however, usually targets seeds of imported agricultural commodities such as grain, seeds and feed, which are suspected to be contaminated with *Striga* seeds. *Striga* seeds can contaminate seeds or grain by multiple pathways via transportation, storage and trade. Morphological identification of *Striga* seeds or plants is based on known reference specimens, literature descriptions and taxonomic identification keys. Considerable data from molecular studies of *Striga* are available and could be helpful for species determination, but until methods can be simplified and uniform they are of limited value for phytosanitary purposes.	C	**European Union** Important data from molecular research on Striga is available (refer to information sources for these studies). *Category : SUBSTANTIVE*	**Considered but not incorporated** As in the text, considerable data from molecular studies of Striga are available and can be helpful for species determination, but until methods can be simplified and uniform, they are of limited value for phytosanitary purposes.
161	96	Classification and identification of *Striga* species depends largely on floral characters. ~~Inspection, however, usually targets seeds~~ Morphological identification of ~~imported agricultural commodities such as grain, seeds and feed, which are suspected to be contaminated with *Striga* seeds.~~ *Striga* ~~seeds can contaminate seeds or grain by multiple pathways via transportation, storage and trade. Morphological identification of *Striga*~~ seeds or plants is based on known reference specimens, literature descriptions and taxonomic identification keys. Considerable data from molecular studies of *Striga* are available and could be helpful for species	P	**Argentina** Text deleted because is redundant, it was already mentioned in section 3.1. This section should contain only information on the identification method. This paragraph mentions taxonomic identification keys that are not included in the protocol and they should be added. *Category : TECHNICAL*	**Considered but not incorporated** Some redundancy is helpful so readers do not have to spend time going to a different section of the text

		determination, but until methods can be simplified and uniform they are of limited value for phytosanitary purposes.			
162	96	Classification and identification of *Striga* species depends largely on floral characters. Inspection, however, usually targets seeds of imported agricultural commodities such as grain, seeds and feed, which are suspected to be contaminated with *Striga* seeds. *Striga* seeds can contaminate seeds or grain by multiple pathways via transportation, storage and trade. Morphological identification of *Striga* seeds or plants is based on known reference specimens, literature descriptions and taxonomic identification keys. Considerable data from molecular studies of *Striga* are available and could be helpful for species determination, but until methods can be simplified and uniform they are of limited value for phytosanitary purposes.	C	**EPPO** What is mean with 'Striga seeds can contaminate seeds or grain by multiple pathways via transportation, storage and trade'? Why is it needed in this section. *Category : TECHNICAL*	**See answer to comment 159**
163	96	Classification and identification of *Striga* species depends largely on floral characters. Inspection, however, usually targets seeds of imported agricultural commodities such as grain, seeds and feed, which are suspected to be contaminated with *Striga* seeds. *Striga* seeds can contaminate seeds or grain by multiple pathways via transportation, storage and trade. Morphological identification of *Striga* seeds or plants is based on known reference specimens, literature descriptions and taxonomic identification keys. Considerable data from molecular studies of *Striga* are available and could be helpful for species determination, but until methods can be simplified and uniform they are of limited value for phytosanitary purposes.	C	**EPPO** Important data from molecular research on Striga is available (refer to information sources for these studies) *Category : SUBSTANTIVE*	**Considered but not incorporated** See answer to comment 158
164	96	Classification and identification of *Striga* species depends largely on floral characters. Inspection, however, usually targets seeds of imported agricultural commodities such as grain, seeds and feed, which are suspected to be contaminated	C	**United States of America** Is this document proposing that both identification methods are needed for identification. Or can it be either method independently? *Category : TECHNICAL*	**Considered but not incorporated** In many cases it seems likely inspectors will not have access to flowering material

		with *Striga* seeds. *Striga* seeds can contaminate seeds or grain by multiple pathways via transportation, storage and trade. Morphological identification of *Striga* seeds or plants is based on known reference specimens, literature descriptions and taxonomic identification keys. Considerable data from molecular studies of *Striga* are available and could be helpful for species determination, but until methods can be simplified and uniform they are of limited value for phytosanitary purposes.			
165	96	Classification and identification of *Striga* species depends largely on floral characters. ~~Inspection, however, usually targets seeds of imported agricultural commodities such as grain, seeds and feed, which are suspected to be contaminated with *Striga* seeds.~~ Morphological identification of *Striga* ~~seeds can contaminate seeds or grain by multiple pathways via transportation, storage and trade. Morphological identification of *Striga*~~ seeds or plants is based on known reference specimens, literature descriptions and taxonomic identification keys. Considerable data from molecular studies of *Striga* are available and could be helpful for species determination, but until methods can be simplified and uniform they are of limited value for phytosanitary purposes.	P	**Uruguay** Text deleted because is redundant (it was already mentioned in section 3.1). This section should contain only information on the identification method. In addition, this paragraph mentions taxonomic identification keys that are not included in the Protocol and they should be added *Category : TECHNICAL*	**Considered but not incorporated** See answer to comment 161
166	96	Classification and identification of *Striga* species depends largely on floral characters. ~~Inspection, however, usually targets seeds of imported agricultural commodities such as grain, seeds and feed, which are suspected to be contaminated with *Striga* seeds.~~ Morphological identification of *Striga* ~~seeds can contaminate seeds or grain by multiple pathways via transportation, storage and trade. Morphological identification of *Striga*~~ seeds or plants is based on known reference specimens, literature descriptions and taxonomic identification	P	**Peru** El texto se borra porque es redundante, ya fue mencionado en el punto 3.1. *Category : TECHNICAL*	**Considered but not incorporated** See answer to comment 161

		keys. Considerable data from molecular studies of *Striga* are available and could be helpful for species determination, but until methods can be simplified and uniform they are of limited value for phytosanitary purposes~~.~~			
167	96	Classification and identification of *Striga* species depends largely on floral characters. ~~Inspection, however, usually targets seeds of imported agricultural commodities such as grain, seeds and feed, which are suspected to be contaminated with *Striga* seeds.~~ Morphological identification of *Striga* ~~seeds can contaminate seeds or grain by multiple pathways via transportation, storage and trade. Morphological identification of *Striga*~~ seeds or plants is based on known reference specimens, literature descriptions and taxonomic identification keys. Considerable data from molecular studies of *Striga* are available and could be helpful for species determination, but until methods can be simplified and uniform they are of limited value for phytosanitary purposes.	P	**COSAVE** El texto se borra porque es rebundante, ya fue mencionado en el punto 3.1. Esta sección debería contener solamente información sobre método de identificación. En este parráfo se menciona clave de identificación taxonómica que no se incluyen en el protocolo y debería incluirse. Text deleted because is redundant, it was already mentioned in section 3.1. This section should contain only information on the identification method. This paragraph mentions taxonomic identification keys that are not included in the protocol and they should be added. *Category : TECHNICAL*	**Considered but not incorporated** See answer to comment 161
4.2 Identification of seeds of Striga species					
168	97	**4.2 Identification of seeds of *Striga* species**	P	**United States of America** The methods included are the current standard operating procedures for North American and international seed analysts under the AOSA and ISTA rules. Based on professional seed botanist experience with the dry sieving method for detection of dust-like seeds, a PCR-based test for Striga would be optimal when coupled with a wet sieving method. This combined approach would help mitigate issues of laboratory contamination inherent in working with dust-like seeds if samples are positive. In addition, as a practical issue it is exceedingly difficult to decontaminate equipment used for dividing and dry sieving of seed or grain samples contaminated with dust like seeds such as Striga and other Orobanchaceae parasites, therefore dedicated equipment/ facilities may be needed for high-risk samples. Finally, it should be noted that the dry sieve and wash filtration methods are not suitable for testing pesticide treated seed or seeds that are coated or pelleted. This notation is specifically made in both the International Seed Testing Association Rules for Seed	**Modified** No text suggestions, but the text in this section has been updated. The lead author notes that "Dry and wet, both methods were recommended in the document. It will be up to the lab to solve the practical operation to reduce the risk of contamination. E.g., how to clean and how to maintain a separate equipment etc."

				Testing (both methods) and in the Association of Official Seed Analysts Rules for Testing Seeds (dry sieve method), from which the draft protocols for detection of Striga in seed samples. *Category : TECHNICAL*	
169	98	Seed identification of *Striga* species is based on seed size, shape, surface texture and colour. The capsules of *Striga* are loculicidal, containing a large number of seeds in various shapes, including elliptic, ovate, rectangular, D-shaped, trigonous, rhombic, or ~~irregular (Figure 1)~~irregular. However, capsules are usually broken, damaged or removed in most contaminated commodities during their processing. *Striga* seeds (Figure 1) are dust-like particles, 0.2–0.6 mm long and 0.1–0.3 mm wide; their surface has twisted and longitudinally linear ridges; they are translucent; and seed colour varies from light brown to dark brown, from orange to golden brown, and from grey to light black, glistening under high-magnification microscopy (e.g. 20× to 40× magnification). The embryo is linear, and a sparse endosperm is present.	P	**Japan** Move "(Figure 1)" after "Striga seeds" in 3rd sentence. The information of morphological features of Striga to compare the features of Orobanche in Figure 2 is better in 3rd sentence than in 2nd sentence. *Category : EDITORIAL*	**Considered but not incorporated** This section reads better as originally written, keeping the citation of the figure close to the description but the text has been updated for a better description of the surface.
170	99	Other dust-like seeds are those of the genera *Orobanche* (Figure 2), *Phelipanche* and *Alectra*, which are a similar size but have a regularly reticulated surface. Seeds of *Alectra* are truncate at the apex. In general, the seed surface of *Orobanche* and *Phelipanche* is deeply honeycombed and lacks the spiral, ornamented ridges of *Striga* (Musselman and Parker, 1981b). Using a microscope, these seeds can be distinguished from *Striga*. Pictures of seeds of *S. asiatica*, *S. gesnerioides* and *S. hermonthica* are shown in Figures 1A to 1E and seed characteristics are summarized in Table 1.	C	**European Union** Text and table 1 are useful but not sufficient to clearly distinguish the three Striga spp. from other Orobanchaceae species. Would it be possible to propose an identification tool with a dichotomical key? *Category : SUBSTANTIVE*	**Modified** The text has been updated for a better distinction between the three *Striga* spp. The original table 1 (now table 3) has been moved down after the sub-sections on the seed morphology of the three *Striga* spp. The TPDP agreed to incorporate links to the USDA supported webpage: FNW Disseminules for additional images, comparative images, and descriptive elements under the Figures in Section 9.
171	99	Other dust-like seeds are those of the genera *Orobanche* (Figure 2), *Phelipanche* and *Alectra*, which are a similar size but have a regularly reticulated surface. Seeds of *Alectra* are truncate at	C	**EPPO** Text and table 1 are useful but not sufficient to clearly distinguish the three Striga spp. from other Orobanchaceae species. Would it be possible to propose an identification tool with a dichotomical key?	**Same comment as 170**

		the apex. In general, the seed surface of *Orobanche* and *Phelipanche* is deeply honeycombed and lacks the spiral, ornamented ridges of *Striga* (Musselman and Parker, 1981b). Using a microscope, these seeds can be distinguished from *Striga*. Pictures of seeds of *S. asiatica*, *S. gesnerioides* and *S. hermonthica* are shown in Figures 1A to 1E and seed characteristics are summarized in Table 1.		*Category : SUBSTANTIVE*	
172	99	Other dust-like seeds are those of the genera *Orobanche* (Figure 2), *Phelipanche* and *Alec tra*, which are a similar size but have a regularly reticulated surface. Seeds of *Alectra* are truncate at the apex. In general, the seed surface of *Orobanche* and *Phelipanche* is deeply honeycombed and lacks the spiral, ornamented ridges of *Striga* (Musselman and Parker, 1981b). Using a microscope, these seeds can be distinguished from *Striga*. Pictures of seeds of *S. asiatica*, *S. gesnerioides* and *S. hermonthica* ar e shown in Figures 1A to 1E and seed characteristics are summarized in Table 1.	C	**United States of America** Should we know how to discriminate S. asiatica, S. gesnerioides and S. hermonthica from other Striga species? Is that also within the scope of this document? *Category : TECHNICAL*	**Considered but not incorporated** The survey of the genus is not within the scope of this document nor is the inclusion of other dust-like seeds, eg, Orchidaceae
173	99	Other dust-like seeds are those of the genera *Orobanche* ~~(Figure 2)~~, *Phelipanche* and *Alectra*, which are a similar size but have a regularly reticulated surface. Seeds of *Alectra* are truncate at the apex. In general, the seed surface of ~~*Orobanche*~~ *Orobanche* (Figure 2) and *Phelipanche* is deeply honeycombed and lacks the spiral, ornamented ridges (i.e. twisted and longitudinally linear ridges) of *Striga* (Musselman and Parker, 1981b). Using a microscope, these seeds can be distinguished from *Striga*. Pictures of seeds of *S. asiatica*, *S. gesnerioides* and *S. hermonthica* are shown in Figures 1A to 1E and seed characteristics are summarized in Table 1.	P	**Japan** Move "(Figure 2)" after "surface of Orobanche" in 3rd sentence. The information of morphological features of Orobanche to compare the features of Striga in Figure 1 is better in 3rd sentence than in 1st sentence. The expression of morphological features of Striga seeds here is different from the expression of 4th sentence in the previous paragraph [98]. Therefore, in order to complement information about the morphological features of Striga seeds here, add words "twisted and longitudinally linear ridges" which are described in 4th sentence in paragraph 98. *Category : SUBSTANTIVE*	**Modified** Reference to the spiral, twisted ridges on *Striga* seeds added as well as comparison with *Orobanche* seeds
174	99	Other dust-like seeds are those of the genera *Orobanche* (Figure 2), *Phelipanche* and *Alectra*, which are a similar size but have a regularly	C	**Japan** It might be better to add photographs that show morphological features of Alectra if any.	**Modified** Figure 2(B), an imageof *Alectra* has been added. The TPDP also agreed to

		reticulated surface. Seeds of *Alectra* are truncate at the apex. In general, the seed surface of *Orobanche* and *Phelipanche* is deeply honeycombed and lacks the spiral, ornamented ridges of *Striga* (Musselman and Parker, 1981b). Using a microscope, these seeds can be distinguished from *Striga*. Pictures of seeds of *S. asiatica*, *S. gesnerioides* and *S. hermonthica* are shown in Figures 1A to 1E and seed characteristics are summarized in Table 1.		*Category : TECHNICAL*	incorporate links to the USDA supported webpage: FNW Disseminules for additional images, comparative images, and descriptive elements under the Figures in Section 9.
175	100	**Table 1.** Summary of main characteristics of seed morphology of the three most economically damaging *Striga* species	C	**European Union** We propose to add information about quarantine species Striga euphrasioides to table 1 for further identification. *Category : SUBSTANTIVE*	**Considered but not incorporated** *Striga euphrasioides* is of only minor importance
176	100	**Table 1.** Summary of main characteristics of seed morphology of the three most economically damaging *Striga* species	C	**EPPO** We propose to add information about quarantine species Striga euphrasioides to table 1 for further identification *Category : SUBSTANTIVE*	**See answer to comment 175**
177	101	**Seed characters**	C	**China** The differences among the three seed characteristics listed in the table are not obvious. It is difficult to recognize the three species clearly according to one or several morphological traits of the seeds. Can you make an index key for those three species's identification here? It may refer to ISPM 27 Diagnostic protocols for regulated pests DP 19: Sorghum halepense. *Category : SUBSTANTIVE*	**Modified** The text has been updated for a better distinction between the three *Striga* spp. The original table 1 (now table 3) has been moved down after the sub-sections on the seed morphology of the three *Striga* spp. The TPDP also agreed to incorporate links to the USDA supported webpage: FNW Disseminules for additional images, comparative images, and descriptive elements under the Figures in Section 9.
178	103	~~**Size**~~ **Length (mm)**	P	**Australia** Suggested change to be more precise. (unit given is mm) *Category : EDITORIAL*	**Considered but not incorporated** A single size is not realistic so this has been removed from the table. Prescriptive text has been added to the draft, including that they are dust-like particles ranging from 0.2–0.35 mm long, exceeding the width which can be as narrow as 0.1mm.
179	111	~~Lengthwise lines or ridge lines~~Longitudinal ridges with reticular spinal processes, with reticular spinal processes	P	**Australia** suggested to provide extra clarity *Category : EDITORIAL*	**Modified** Text modified to read "Longitudinal ridges more or less parallel, linear to spirally arranged, ridge spine strikingly ornamented."

180	113		C	**United States of America** It is really difficult to read the scale for the pictures *Category : TECHNICAL*	**Considered but not incorporated** Larger versions of the images can be found in Section 9. Figures and the scale is visible
181	114	*S. ~~generioides~~gesnerioides*	P	**Argentina** *Category : EDITORIAL*	**Incoporated**
182	114	*S. ~~generioides~~gesnerioides*	P	**Australia** Clarification on spelling *Category : EDITORIAL*	**Incoporated**
183	114	*S. generioides*	C	**Uruguay** S. gesnerioides *Category : EDITORIAL*	**Incoporated**
184	114	*S~~. generioides~~.gesnerioides*	P	**Peru** *Category : EDITORIAL*	**Incoporated**
185	114	*S. generioides*	C	**Indonesia** this species may Striga gesnerioides *Category : EDITORIAL*	**Incoporated**
186	114	*S. ~~generioides~~gesnerioides*	P	**COSAVE** *Category : EDITORIAL*	**Incoporated**
187	115	0.25	C	**United States of America** Parker and Riches: Parasitic weeds of the World, page 21,Indicates 0.33 mm *Category : TECHNICAL*	**Considered but not incorporated** A single size is not realistic so this has been removed from the table. Prescriptive text has been added to the draft, including that they are dust-like particles ranging from 0.2–0.35 mm long, exceeding the width which can be as narrow as 0.1mm.
188	119		C	**Indonesia** Indonesia proposes to put the image of one seed per species with the scale must clearly represent the size of the seed *Category : TECHNICAL*	**Considered but not incorporated** Larger versions of the images can be found in Section 9. Figures and the scale is visible
4.2.1 Capsule morphology of important species of Striga					
189	126	**4.2.1 Capsule morphology of important species of *Striga***	C	**China** Fruit (capsule) characteristic pictures were only shown with scanning pictures of S. asiatica, but two other major harmful species were missing. In addition, there are no detailed morphological pictures. It is suggested to add detailed pictures of the fruits. *Category : SUBSTANTIVE*	**Modified** Reorganization of the text was done to avoid overlap of the same information is sections 4.2 and 4.3. The original 4.2.1 was deleted and a general sentence was added to the new 4.3. The TPDP agreed this was a good approach.

190	127	Capsule morphology is important in separating major groups of *Striga* species. The number of ribs in the calyx and their width and ornamentation can be helpful in determining taxa. See Figure 3 and Ramaiah *et al*. (1983) for images of seed capsules.	C	**Japan** It might be better to add a picture to see whole seed capsule because Figure 3 shows only part of seed capsule. *Category : SUBSTANTIVE*	**See answer to comment 189**
191	128	Morphological differences in the capsules can be used for identification. The capsule of *S. asiatica* is 7 mm long and 2 mm wide; the capsule of *S. gesnerioides* is 10–20 mm long and 3 mm wide; while the capsule of *S. hermonthica* is 12–15 mm long and 2–2.5 mm wide (Musselman and Hepper, 1986).	C	**European Union** If possible, add a picture to illustrate the capsule. *Category : TECHNICAL*	**See answer to comment 189**
192	128	Morphological differences in the capsules can be used for identification. The capsule of *S. asiatica* is 7 mm long and 2 mm wide; the capsule of *S. gesnerioides* is 10–20 mm long and 3 mm wide; while the capsule of *S. hermonthica* is 12–15 mm long and 2–2.5 mm wide (Musselman and Hepper, 1986).	C	**EPPO** If possible, add a picture to illustrate the capsule *Category : TECHNICAL*	**See answer to comment 189**
4.2.2 Seed morphology of Striga asiatica					
193	130	The seed of *S. asiatica* is golden brown, very small and oval in shape with a netted surface featuring lengthwise lines or ridge lines (Figures 1A to 1C). These ridges, which often form a twisted pattern, have reticular spinal processes. The surface texture of the seed coat is key to identification (Global Invasive Species Database: IUCN, n.d.). The seed typically weighs 3.7 µg and is about 0.33 mm long, this being one-twentieth of the length of a tobacco seed (Cochrane and Press, 1997).	C	**European Union** Seeds have triangular, rhombus, or elongated shape. Under the microscope and increase of 100-200x times on the surface of the seed is wavy ribbed, and at an increase of 650 x - porosity. (Manual on quarantine and other dangerous pests, diseases and weed plants). Why comparing to tobacco seed is relevant? For inspectors of area where no tobacco is cultivated it is probably not very meaningful. *Category : TECHNICAL*	**Modified** Text updated and reference to tobacco seed deleted
194	130	The seed of *S. asiatica* is golden brown, very small and oval in shape with a netted surface featuring lengthwise lines or ridge lines (Figures 1A to 1C). These ridges, which often form a twisted pattern, have reticular spinal processes. The surface texture of the seed coat is key to identification (Global Invasive Species Database: IUCN, n.d.). The seed typically weighs 3.7 µg and is about 0.33 mm long, this being one-twentieth of	C	**EPPO** Why comparing to tobacco seed is relevant? For inspectors of area where no tobacco is cultivated it is probably not very meaningful. *Category : EDITORIAL*	**same comment as 193**

		the length of a tobacco seed (Cochrane and Press, 1997).			
195	130	The seed of *S. asiatica* is golden brown, very small and oval in shape with a netted surface featuring lengthwise lines or ridge lines (Figures 1A to 1C). These ridges, which often form a twisted pattern, have reticular spinal processes. The surface texture of the seed coat is key to identification (Global Invasive Species Database: IUCN, n.d.). The seed typically weighs 3.7 µg and is about 0.33 mm long, this being one-twentieth of the length of a tobacco seed (Cochrane and Press, 1997).	C	**EPPO** Seeds have triangular, rhombus, or elongated shape. Under the microscope and increase of 100-200x times on the surface of the seed is wavy ribbed, and at an increase of 650 x - porosity. (Manual on quarantine and other dangerous pests, diseases and weed plants) *Category : TECHNICAL*	**Modified** Text updated
4.2.4 Seed morphology of Striga hermonthica					
196	134	Seeds of *S. hermonthica* (Figure 1E) are about 0.30 mm long, usually elliptic or ovate, with their colour varying from light to dark brown. They have a honeycombed surface with prominent lengthwise lines, often appearing twisted.	C	**European Union** We suggest to add a morphological description of the seed of Striga euphrasioides after this paragraph. *Category : SUBSTANTIVE*	**Considered but not incorporated** *Striga euphrasioides* is of only minor importance
197	134	Seeds of *S. hermonthica* (Figure 1E) are about 0.30 mm long, usually elliptic or ovate, with their colour varying from light to dark brown. They have a honeycombed surface with prominent lengthwise lines, often appearing twisted.	C	**EPPO** We suggest to add a morphological description of the seed of Striga euphrasioides after this paragraph *Category : SUBSTANTIVE*	**Same comment as 196**
4.3 Plant identification					
198	135	**4.3 Plant identification**	C	**Argentina** It is suggested to include the identification of plants (section 4.3) before to the identification of sedes (Section 4.2) *Category : TECHNICAL*	**Considered but not incorporated** Since seeds are the major emphasis of this protocol, situating them before plants seems logical
199	135	**4.3 Plant identification**	C	**Uruguay** We suggest to include section 4.3 (Plant identification) before section 4.2 (Seed identification) *Category : TECHNICAL*	**See answer to comment 198**
200	135	**4.3 Plant identification**	C	**COSAVE** Se recomienda poner la identificación de plantas (sección 4.3) previo a la identificación de las semillas (4.2). It is suggested to include the identification of plants (section 4.3) before to the identification of sedes (Section 4.2) *Category : TECHNICAL*	**See answer to comment 198**
201	136	*Striga* seedlings appear underground as white tender shoots attached to the roots of host plants via haustoria. This means that by the time the host	C	**European Union** We suggest to change this line. It is unclear why the flowering occurs only after rain, without counting other biotic factors.	**Modified** Text in this paragraph has been simplified

		stems emerge, *Striga* is already growing below the soil surface and damaging the host. The mature plants have green leaves sparsely covered by short white, stiff hairs that give a scabrous feel to the leaf surface (like sandpaper). The plants are usually 15–30 cm high but may be as high as 60 cm. They flower after rains (with a flower length below 1.5 cm). When a suitable host is present, *Striga* seeds require one to two weeks of moisture and temperatures of at least 20 °C (with 25–35 °C being optimal) before they germinate. The morphological characteristics of the three most economically damaging species are listed below, and summarized in Table 2.		*Category : SUBSTANTIVE*	
202	136	*Striga* seedlings appear underground as white tender shoots attached to the roots of host plants via haustoria. This means that by the time the host stems emerge, *Striga* is already growing below the soil surface and damaging the host. The mature plants have green leaves sparsely covered by short white, stiff hairs that give a scabrous feel to the leaf surface (like sandpaper). The plants are usually 15–30 cm high but may be as high as 60 cm. They flower after rains (with a flower length below 1.5 cm). When a suitable host is present, *Striga* seeds require one to two weeks of moisture and temperatures of at least 20 °C (with 25–35 °C being optimal) before they germinate. The morphological characteristics of the three most economically damaging species are listed below, and summarized in Table 2.	C	**EPPO** We suggest to change this line. It is unclear why the flowering occurs only after rain, without counting other biotic factors *Category : SUBSTANTIVE*	**Same comment as 201**
203	136	*Striga* seedlings appear underground as white tender shoots attached to the roots of host plants via haustoria. This means that by the time the host stems emerge, *Striga* is already growing below the soil surface and damaging the host. The mature plants have green leaves sparsely covered by short	P	**United States of America** correction *Category : TECHNICAL*	**Considered but not incorporated** Text in this paragraph has been simplified

		white, stiff hairs that give a scabrous feel to the leaf surface (like sandpaper). The plants are usually 15–30 cm high but may be as high as 60 cm. They flower after ~~rains~~rain (with a flower length below 1.5 cm). When a suitable host is present, *Striga* seeds require one to two weeks of moisture and temperatures of at least 20 °C (with 25–35 °C being optimal) before they germinate. The morphological characteristics of the three most economically damaging species are listed below, and summarized in Table 2.			
204	136	*Striga* seedlings appear underground as white tender shoots attached to the roots of host plants via haustoria. This means that by the time the host stems emerge, *Striga* is already growing below the soil surface and damaging the host. The mature plants have green leaves sparsely covered by short white, stiff hairs that give a scabrous feel to the leaf surface (like sandpaper). The plants are usually 15–30 cm high but may be as high as 60 cm. They flower after rains (with a flower length below 1.5 cm). When a suitable host is present, *Striga* seeds require one to two weeks of moisture and temperatures of at least 20 °C (with 25–35 °C being optimal) before they germinate. The morphological characteristics of the three most economically damaging species are listed below, and summarized in Table 2.	C	**Gambia** This means that by the time the host stems emerge, Striga is already growing on the roots of the host below the soil surface and damaging the host. *Category : TECHNICAL*	**See answer to comment 203**
205	137	**Table 2.** Summary of main characteristics of plant morphology of the three most economically damaging *Striga* species	C	**European Union** We propose to add information about quarantine species Striga euphrasioides to table 2 for further identification. *Category : SUBSTANTIVE*	**Considered but not incorporated** *Striga euphrasioides* is of only minor importance
206	137	**Table 2.** Summary of main characteristics of plant morphology of the three most economically damaging *Striga* species	C	**EPPO** We propose to add information about quarantine species Striga euphrasioides to table 2 for further identification *Category : SUBSTANTIVE*	**Same comment as 205**
207	138	~~**Fundamental characters of floral apparatus**~~	P	**Australia** Suggested deletion of this line for two reasons.1. The title of table says summary of main characteristics of plant	**Incorporated**

				morphology. 2. Table contains data on non-floral plant parts. *Category : EDITORIAL*	
208	140	**Plant ~~size~~ height (cm)**	P	**Australia** Height is more precise than 'size' and the unit given is cm. *Category : TECHNICAL*	**Incorporated** Size changed to height for precision in descriptor
209	142	**Pubescence**	C	**European Union** Does this refer to the pubescence of the stem or pubescence of the flower? The title of the table "Fundamental characters of floral apparatus" could be misleading. *Category : SUBSTANTIVE*	**Modified** Pubescence applies to entire plant, change made
210	142	**Pubescence**	C	**EPPO** Does this refer to the pubescence of the stem or pubescence of the flower? The title of the table "Fundamental characters of floral apparatus" could be misleading. *Category : SUBSTANTIVE*	**Same comment as 209**
211	146	10–30	C	**United States of America** Mohamed, K.I., Musselman, L.J. & Riches, C.R. 2001. The genus Striga (Scrophulariaceae) in Africa. Annals of the Missouri Botanical Garden, 88: 60–103. Mentions up to 40 cm tall. *Category : TECHNICAL*	**Considered but not incorporated** Measurement changed since this publication of 2001
212	152	11–25	C	**United States of America** Mohamed, K.I., Musselman, L.J. & Riches, C.R. 2001. The genus Striga (Scrophulariaceae) in Africa. Annals of the Missouri Botanical Garden, 88: 60–103. Mentions up to 30 cm tall. *Category : TECHNICAL*	**Considered but not incorporated** Measurement as originally written is correct
213	155	Purple, pink or yellow, depending on host	C	**United States of America** Mohamed, K.I., Musselman, L.J. & Riches, C.R. 2001. The genus Striga (Scrophulariaceae) in Africa. Annals of the Missouri Botanical Garden, 88: 60–103. Ramaiah, K.V., Parker, C., Vasudeva Rao, M.J. & Musselman, L.J. 1983. Striga identification and control handbook. Information Bulletin No. 15. Patancheru, India, International Crops Research Institute for the Semi-Arid Tropics. 52 pp. Available at: http://oar.icrisat.org/1221/1/RA_00426.pdf (last accessed 28 January 2018). Describe the flower colors as creamy white and blue. Although one can see how blue might fit in with purple. *Category : TECHNICAL*	**Considered but not incorporated** Retain yellow in corolla color of cowpea witchweed
214	159	Usually ~~unbranched~~branched	P	**Australia** S. hermonthica is usually branched (para 169 row-1 confirms this). table 2 states 'usually unbranched'.	**Modified** Unbranched corrected to sparsely branched

				Category : TECHNICAL	
4.3.1 Striga asiatica					
215	164	**4.3.1 *Striga asiatica***	C	**European Union** The description of each species should be consistent. Some information are only given for one or two species, thus being useless in order to compare and identify one of the 3 species. As requested for the seed identification, a small ID tool with dichotomical key would be much appreciated. *Category : SUBSTANTIVE*	**Modified** Species descriptions rewritten to be parallel
216	164	**4.3.1 *Striga asiatica***	C	**EPPO** The description of each species should be consistent. Some information are only given for one or two species, thus being useless in order to compare and identify one of the 3 species. As requested for the seed identification, a small ID tool with dichotomical key would be much appreciated. *Category : SUBSTANTIVE*	**Modified** Species descriptions rewritten to be parallel
217	165	Annuals, 10–30 cm tall, entirely hirsute. Stems erect, square, sometimes branched. Leaf blade linear to narrowly lanceolate, 5–20 mm × 1–4 mm. Flowers axillary, in a raceme. Calyx 4–8 mm, 10-ribbed; 5 lobes, as long as tube, subulate. Corolla usually red, rarely yellow or white; tube 0.8–1.5 cm, apically strongly curved; upper lip 2-lobed. Capsule ovate, enveloped in persistent calyx (Figure 4A).	C	**European Union** Stems - 15-50 cm, green, bulbous, branch, quadrangular, hollow, diameter 1-3 mm. The underground part of the stem is purple, cylindrical, slightly thicker than the aboveground, 2.5 -7.5 cm in length. (Illustrated guide to regulated pests in Ukraine) Leaves - sessile, linear or lanceolate. Each subsequent pair of leaves is located at right angles to the lower pair. In the underground part of the stem, the leaves are reduced to leathery - fleshy scales. The flowers are axillary, or collected in a loose apical droplet with two linear cymbals, which reach one third of the length of the calyx. The Calyx is tubular, length 5-8 mm, with 10 ribs, which are at the base of the capsule. Capsule is flat, elongated, slightly compressed from the sides; length of 3.2- 7.6 mm. (Manual on quarantine and other dangerous pests, diseases and weed plants) *Category : SUBSTANTIVE*	**Considered but not incorporated** No proposed changes to the text, not clear what is required. The text in this paragraph has been modified
218	165	Annuals, 10–30 cm tall, entirely hirsute. Stems erect, square, sometimes branched. Leaf blade linear to narrowly lanceolate, 5–20 mm × 1–4 mm. Flowers axillary, in a raceme. Calyx 4–8 mm, 10-ribbed; 5 lobes, as long as tube, subulate. Corolla usually red, rarely yellow or white; tube 0.8–1.5 cm, apically strongly curved; upper lip 2-lobed. Capsule ovate, enveloped in persistent calyx (Figure 4A).	C	**EPPO** Stems - 15-50 cm, green, bulbous, branch, quadrangular, hollow, diameter 1-3 mm. The underground part of the stem is purple, cylindrical, slightly thicker than the aboveground, 2.5 -7.5 cm in length. (Illustrated guide to regulated pests in Ukraine) Leaves - sessile, linear or lanceolate. Each subsequent pair of leaves is located at right angles to the lower pair. In the underground part of the stem, the leaves are reduced to leathery - fleshy scales. The flowers are axillary, or collected in a loose apical	**Same comment as 217**

				droplet with two linear cymbals, which reach one third of the length of the calyx. The Calyx is tubular, length 5-8 mm, with 10 ribs, which are at the base of the capsule. Capsule is flat, elongated, slightly compressed from the sides; length of 3.2- 7.6 mm (Manual on quarantine and other dangerous pests, diseases and weed plants) *Category : SUBSTANTIVE*	
219	165	Annuals, 10–30 cm tall, entirely hirsute. Stems erect, square, sometimes branched. Leaf blade linear to narrowly lanceolate, 5–20 mm × 1–4 mm. Flowers axillary, in a raceme. Calyx 4–8 mm, 10-ribbed; 5 lobes, as long as tube, subulate. Corolla usually red, rarely yellow or white; tube 0.8–1.5 cm, apically strongly curved; upper lip 2-lobed. Capsule ovate, enveloped in persistent calyx (Figure 4A).	C	**Thailand** The figures of rare colors of corolla of Striga asiatica should be provided in figure 4. *Category : SUBSTANTIVE*	**Considered but not incorporated** Since in many cases corollas will not be available to users, showing all the variation in corolla color is unnecessary
4.3.2 Striga gesnerioides					
220	166	**4.3.2 *Striga gesnerioides***	C	**United States of America** Ramaiah, K.V., Parker, C., Vasudeva Rao, M.J. & Musselman, L.J. 1983. Striga identification and control handbook. Information Bulletin No. 15. Patancheru, India, International Crops Research Institute for the Semi-Arid Tropics. 52 pp. Available at: http://oar.icrisat.org/1221/1/RA_00426.pdf (last accessed 28 January 2018). Indicates a height of 0.5 m ---------- Parker and Riches: Parasitic weeds of the World page 4. Indicates a height of 30-40 cm and sometimes up to 100 cm or more. *Category : TECHNICAL*	**Considered but not incorporated** No proposed changes to the text, not clear what is required.
221	167	Annual or weakly perennial or monocarpic, 11–25 cm tall with many adventitious roots from the base. Usually light green or yellow green, succulent; many closely packed stems at the soil surface. Stem square with obtuse angles; leaves appressed to the stem, 5–10 mm × 2–3 mm. Leaves and stems puberulent, or almost glabrous. Corolla usually purple, rarely pink or yellow. Flowers opposite or alternate, mostly with two flowers for each node, rarely three, no fragrance. Bract and sepal of equal length; corolla 1.2–1.5 cm long (Figure 4B; Mohamed *et al*., 2001).	C	**European Union** Perennial with branched reddish or yellow-green branched stem up to 50 cm high. Leaves are reduced to fleshy bursts. Striga does not form green leaves and is a complete parasite. The calyx is four-vertebrate. (Manual on quarantine and other dangerous pests, diseases and weed plants) *Category : SUBSTANTIVE*	**Considered but not incorporated** The suggested changes are erroneous. *Striga* does contain chlorophyll and is green
222	167	Annual or weakly perennial or monocarpic, 11–25 cm tall with many adventitious roots from the base. Usually light green or yellow green, succulent;	C	**European Union** This information should be given also for S. asiatica. *Category : SUBSTANTIVE*	**Modified** Included flower arrangement in description

		many closely packed stems at the soil surface. Stem square with obtuse angles; leaves appressed to the stem, 5–10 mm × 2–3 mm. Leaves and stems puberulent, or almost glabrous. Corolla usually purple, rarely pink or yellow. Flowers opposite or alternate, mostly with two flowers for each node, rarely three, no fragrance. Bract and sepal of equal length; corolla 1.2–1.5 cm long (Figure 4B; Mohamed *et al*., 2001).			
223	167	Annual or weakly perennial or monocarpic, 11–25 cm tall with many adventitious roots from the base. Usually light green or yellow green, succulent; many closely packed stems at the soil surface. Stem square with obtuse angles; leaves appressed to the stem, 5–10 mm × 2–3 mm. Leaves and stems puberulent, or almost glabrous. Corolla usually purple, rarely pink or yellow. Flowers opposite or alternate, mostly with two flowers for each node, rarely three, no fragrance. Bract and sepal of equal length; corolla 1.2–1.5 cm long (Figure 4B; Mohamed *et al*., 2001).	C	**European Union** Unfortunately, it cannot be compared with S. asiatica for which only the tube length is given, not the whole corolla. *Category : SUBSTANTIVE*	**Modified** The description refers to the length of the corolla as the tube. Text has been updated
224	167	Annual or weakly perennial or monocarpic, 11–25 cm tall with many adventitious roots from the base. Usually light green or yellow green, succulent; many closely packed stems at the soil surface. Stem square with obtuse angles; leaves appressed to the stem, 5–10 mm × 2–3 mm. Leaves and stems puberulent, or almost glabrous. Corolla usually purple, rarely pink or yellow. Flowers opposite or alternate, mostly with two flowers for each node, rarely three, no fragrance. Bract and sepal of equal length; corolla 1.2–1.5 cm long (Figure 4B; Mohamed *et al*., 2001).	C	**European Union** Give calyx length as for S. asiatica. *Category : SUBSTANTIVE*	**Incorporated** Bract leaf for other species added
225	167	Annual or weakly perennial or monocarpic, 11–25 cm tall with many adventitious roots from the base. Usually light green or yellow green, succulent; many closely packed stems at the soil surface. Stem	C	**EPPO** Unfortunately, it is not comparable to S. asiatica for which only the tube length is given, not the whole corolla. *Category : SUBSTANTIVE*	**Incorporated** Corolla length added

		square with obtuse angles; leaves appressed to the stem, 5–10 mm × 2–3 mm. Leaves and stems puberulent, or almost glabrous. Corolla usually purple, rarely pink or yellow. Flowers opposite or alternate, mostly with two flowers for each node, rarely three, no fragrance. Bract and sepal of equal length; corolla 1.2–1.5 cm long (Figure 4B; Mohamed *et al*., 2001).			
226	167	Annual or weakly perennial or monocarpic, 11–25 cm tall with many adventitious roots from the base. Usually light green or yellow green, succulent; many closely packed stems at the soil surface. Stem square with obtuse angles; leaves appressed to the stem, 5–10 mm × 2–3 mm. Leaves and stems puberulent, or almost glabrous. Corolla usually purple, rarely pink or yellow. Flowers opposite or alternate, mostly with two flowers for each node, rarely three, no fragrance. Bract and sepal of equal length; corolla 1.2–1.5 cm long (Figure 4B; Mohamed *et al*., 2001).	C	**EPPO** Give calyx length as for S. asiatica. *Category : SUBSTANTIVE*	**Incorporated** Measurement added
227	167	Annual or weakly perennial or monocarpic, 11–25 cm tall with many adventitious roots from the base. Usually light green or yellow green, succulent; many closely packed stems at the soil surface. Stem square with obtuse angles; leaves appressed to the stem, 5–10 mm × 2–3 mm. Leaves and stems puberulent, or almost glabrous. Corolla usually purple, rarely pink or yellow. Flowers opposite or alternate, mostly with two flowers for each node, rarely three, no fragrance. Bract and sepal of equal length; corolla 1.2–1.5 cm long (Figure 4B; Mohamed *et al*., 2001).	C	**EPPO** This information should be given also for S. asiatica. *Category : SUBSTANTIVE*	**Incorporated** Included flower arrangement in description
228	167	Annual or weakly perennial or monocarpic, 11–25 cm tall with many adventitious roots from the base. Usually light green or yellow green, succulent; many closely packed stems at the soil surface. Stem square with obtuse angles; leaves appressed to the stem, 5–10 mm × 2–3 mm.	C	**EPPO** Perennial with branched reddish or yellow-green branched stem up to 50 cm high. Leaves are reduced to fleshy bursts. Striga does not form green leaves and is a complete parasite.	**See answer to comment 221**

		Leaves and stems puberulent, or almost glabrous. Corolla usually purple, rarely pink or yellow. Flowers opposite or alternate, mostly with two flowers for each node, rarely three, no fragrance. Bract and sepal of equal length; corolla 1.2–1.5 cm long (Figure 4B; Mohamed *et al*., 2001).		The calyx is four-vertebrate.(Manual on quarantine and other dangerous pests, diseases and weed plants) *Category : SUBSTANTIVE*	
229	167	Annual or weakly perennial or monocarpic, 11–25 cm tall with many adventitious roots from the base. Usually light green or yellow green, succulent; many closely packed stems at the soil surface. Stem square with obtuse angles; leaves appressed to the stem, 5–10 mm × 2–3 mm. Leaves and stems puberulent, or almost glabrous. Corolla usually purple, rarely pink or yellow. Flowers opposite or alternate, mostly with two flowers for each node, rarely three, no fragrance. Bract and sepal of equal length; corolla 1.2–1.5 cm long (Figure 4B; Mohamed *et al*., 2001).	C	**Thailand** The figure of rare colors of corolla of Striga gesnerioides should be provided in figure 4. *Category : SUBSTANTIVE*	**Considered but not incorporated** Since in many cases corollas will not be available to users, showing all the variation in corolla color is unnecessary
4.3.3 Striga hermonthica					
230	169	Annual, up to 90 cm tall. Stem square, furrowed; branched from middle, densely scabrous. Leaves 15–18 mm, opposite, linear or narrowly elliptic, longer than internodes; margin entire, veins obscure. Lower floral bracts 12–50 mm long and 2–5 mm wide, longer than calyx; upper bracts lanceolate, equal to or longer than calyx. Flowers opposite, forming a lax raceme denser above middle. Calyx 5-ribbed, 7–12 mm long; tube 5–10 mm long; sepal with 5 unequal lobes of 2–4 mm, shorter than corolla tube. Corolla pink or light purple, rarely white (Figures 4C and 4D; Mohamed *et al*., 2001).	C	**European Union** Height -more than 60 cm. Stem - hair-rough, slightly branched, has few leaves. Leaves - lower - opposite; top regular. (GP Moskalenko Quarantine Weed Plants of Russia) *Category : SUBSTANTIVE*	**Considered but not incorporated** Not clear what change is suggested but text has been modified.
231	169	Annual, up to 90 cm tall. Stem square, furrowed; branched from middle, densely scabrous. Leaves 15–18 mm, opposite, linear or narrowly elliptic, longer than internodes; margin entire, veins obscure. Lower floral bracts 12–50 mm long and 2–5 mm wide, longer than calyx; upper bracts lanceolate, equal to or longer than calyx. Flowers opposite, forming a lax raceme denser above middle. Calyx 5-ribbed, 7–12 mm long; tube 5–10 mm long; sepal with 5 unequal lobes of 2–4 mm, shorter than corolla tube. Corolla	C	**European Union** Nice to give this information, but it would be worth to give it for the two other species as well. *Category : SUBSTANTIVE*	**Modified** Arrangement added

		pink or light purple, rarely white (Figures 4C and 4D; Mohamed *et al*., 2001).			
232	169	Annual, up to 90 cm tall. Stem square, furrowed; branched from middle, densely scabrous. Leaves 15–18 mm, opposite, linear or narrowly elliptic, longer than internodes; margin entire, veins obscure. Lower floral bracts 12–50 mm long and 2–5 mm wide, longer than calyx; upper bracts lanceolate, equal to or longer than calyx. Flowers opposite, forming a lax raceme denser above middle. Calyx 5-ribbed, 7–12 mm long; tube 5–10 mm long; sepal with 5 unequal lobes of 2–4 mm, shorter than corolla tube. Corolla pink or light purple, rarely white (Figures 4C and 4D; Mohamed *et al*., 2001).	C	**EPPO** Nice to give this information, but it would be worth to give it similarly for the two other species. *Category : SUBSTANTIVE*	**Modified** Arrangement added
233	169	Annual, up to 90 cm tall. Stem square, furrowed; branched from middle, densely scabrous. Leaves 15–18 mm, opposite, linear or narrowly elliptic, longer than internodes; margin entire, veins obscure. Lower floral bracts 12–50 mm long and 2–5 mm wide, longer than calyx; upper bracts lanceolate, equal to or longer than calyx. Flowers opposite, forming a lax raceme denser above middle. Calyx 5-ribbed, 7–12 mm long; tube 5–10 mm long; sepal with 5 unequal lobes of 2–4 mm, shorter than corolla tube. Corolla pink or light purple, rarely white (Figures 4C and 4D; Mohamed *et al*., 2001).	C	**EPPO** Height -more than 60 cm. stem - hair-rough, slightly branched, has few leaves. Leaves - lower - opposite; top regular. (GP Moskalenko Quarantine Weed Plants of Russia) *Category : SUBSTANTIVE*	**See answer to comment 230**
234	169	Annual, up to 90 cm tall. Stem square, furrowed; branched from middle, densely scabrous. Leaves 15–18 mm, opposite, linear or narrowly elliptic, longer than internodes; margin entire, veins obscure. Lower floral bracts 12–50 mm long and 2–5 mm wide, longer than calyx; upper bracts lanceolate, equal to or longer than calyx. Flowers opposite, forming a lax raceme denser above middle. Calyx 5-ribbed, 7–12 mm long; tube 5–10 mm long; sepal with 5 unequal lobes of 2–4 mm, shorter than corolla tube. Corolla pink or light purple, rarely white (Figures 4C and 4D; Mohamed *et al*., 2001).	C	**Thailand** The figure of rare color of corolla of Striga hermonthica should be provided in figure 4. *Category : SUBSTANTIVE*	**Considered but not incorporated** Since in many cases corollas will not be available to users, showing all the variation in corolla color is unnecessary
235	170	*S. hermonthica* can be confused with *S. aspera*, which is a widespread species in sub-Saharan Africa	P	**Japan** There are no description about Figure 5A and 5B.	**Incorporated** Figures references added

		that differs by the position of the bend in the ~~corolla~~corolla (Figure 5). The bend is at the ~~level of the calyx~~ mid-calyx in S. aspera (Figure 5A) ~~*S. hermonthica*~~ and the ~~mid-calyx~~ level of the calyx in S. hermonthica (Figure 5B)~~*S. aspera*~~. Overall, *S. aspera* has smaller corollas, stems and leaves and is a more delicate ~~plant (Figure 5)~~plant.		*Category : EDITORIAL*	
236	170	*S. hermonthica* can be confused with *S. aspera*, which is a widespread species in sub-Saharan Africa that differs by the position of the bend in the corolla. The bend is at the level of the calyx in *S. hermonthica* and the mid-calyx in *S. aspera*. Overall, *S. aspera* has smaller corollas, stems and leaves and is a more delicate plant (Figure 5).	C	**European Union** (In future) Add to the diagnostic protocol others species of Striga spp. for example: Striga lutea Lour. and Striga euphrasioides Benth. *Category : SUBSTANTIVE*	**Considered but not incorporated** *Striga lutea* is a synonym of *S. asiatica*. *Striga euphrasioides* is of only minor importance
237	170	*S. hermonthica* can be confused with *S. aspera*, which is a widespread species in sub-Saharan Africa that differs by the position of the bend in the corolla. The bend is at the level of the calyx in *S. hermonthica* and the mid-calyx in *S. aspera*. Overall, *S. aspera* has smaller corollas, stems and leaves and is a more delicate plant (Figure 5).	C	**EPPO** In future, add to the diagnostic protocol others species of Striga spp. for example: Striga lutea Lour. and Striga euphrasioides Benth. *Category : SUBSTANTIVE*	**Same comment as 236**
9. Figures					
238	202	**9. Figures**	C	**Indonesia** Indonesia proposes the consistency of the font on scale *Category : EDITORIAL*	**Modified**
239	205		C	**China** It seems to be no need to attach a special picture of Orobanche seeds here. Delete Figure2. Instead, its seed picture can be referred to the literature. The current protocol only describes Striga, not Orobanche. *Category : SUBSTANTIVE*	**Considered but not incorporated** The TPDP agreed to keep Figure 2 and also include an image of *Alectra* and prescriptive text of seeds of similar taxa to Section 4.2.
240	209	**Figure 3.** Scanning electron micrograph of seed capsule of *Striga asiatica*.	C	**China** Figure 3: Add the scanning electron micrographs of seed capsule of Striga gesnerioides and Striga hermonthica It's a direct reference to readers when they use scanning electron micrographs of seed capsule to identify the Striga seeds . *Category : TECHNICAL*	**Considered but not incorporated** SEM of the other species not available In addition, SEM is not accessible to all labs, meaning that illustrations should serve the needs of all types of users, whatever their access to technologies.

241	213	*Photos courtesy of (A), (C) and (D) Lytton John Musselman, Old Dominion University, Norfolk, VA, United States of America; (B) Dinesh Valke, Thane, India.*	C	**China** Figure 4: Add the pictures of the whole plant and different growth period of plant. It's better for readers to know the complete morphological characteristics of 3 kinds of plants, and make the standard even perfect. *Category : TECHNICAL*	**Considered but not incorporated** Not considered necessary for this protocol as it mainly focuses on seeds.
242	214		C	**China** Figure 4B: Make the leaves and other organs out in the picture or put an enlarged detailed picture beside it. It's unable to see where the leaves and other organs are. *Category : TECHNICAL*	**Considered but not incorporated** These additional images would have little utility in this document