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
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** 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. 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. The document should beclarified and English improved. *Category : SUBSTANTIVE*
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*
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** 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. 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.

				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*
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*
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*
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. 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*
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*
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*
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*
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*
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, stunted growth, and a drought-like appearance of the leaves.	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) *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** Yied suppression or reduction is not a symptom. This part should be deleted as effetcs on yield are already mentioned in the previous sentence. 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 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*
29	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** Yied suppression or reduction is not a symptom. This part 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

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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*
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*
34	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	**Egypt** More recent publication claim that: The genus Striga 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	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

		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).		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*
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 *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)	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 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*
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* and *S. hermonthica* are among the most economically damaging weeds in the world. In	C	**European Union** We suggest add the following: The greatest damage to the affected plant is caused by S.

		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 : SUBSTANTIVE*
39	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	**European Union** 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. 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 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*
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*
41	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** We suggest add the following: The greatest damage to the affected plant is caused by S. 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 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* (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** 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*
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 millet), *Panicum* spp., *Eragostis tef* (teff) and *Sorghum bicolor* (sorghum), with some impacts on	C	**EPPO** Correct the mistake when writing Eragostis tef on Eragrostis tef in Latin *Category : EDITORIAL*

		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*
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 *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	**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*
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*

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* (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** 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*
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*
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 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** editorial revision *Category : EDITORIAL*
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),	P	**China** Eragrostis tef (teff). Here the name of crop should be Eragrostis tef (teff). *Category : EDITORIAL*

		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).		
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*
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*
54	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	**Indonesia** Indonesia proposes to write the full scientific name of the 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*
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*
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*
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*

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 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** Homogenize, genus name in full, or only full at first mention and then abbreviated. *Category : EDITORIAL*
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*
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*
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*
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*
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*
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*

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*
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-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	**Singapore** The added words to the first sentence provided a better explanation of the sentences to come. *Category : EDITORIAL*
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*
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*
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*
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. • 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*
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*

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 *Category : TECHNICAL*
75	71	*Buchnera orobanchoides* R.Br. *Striga chloroleuca* Dinter	P	**European Union** This synonym was missing. *Category : SUBSTANTIVE*
76	71	*Buchnera orobanchoides* R.Br. *Striga chloroleuca* Dinter	P	**EPPO** This synonym was missing. *Category : SUBSTANTIVE*
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*
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*
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*
80	80	~~The samples taken from imported consigments should be submitted to a laboratory for inspection.~~	P	**Uruguay** *Category : TECHNICAL*
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*
82	80	~~The samples taken from imported consigments should be submitted to a laboratory for inspection.~~	P	**Peru** *Category : TECHNICAL*
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*
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*

85	80	This section does not cover plants and plant debris because seeds are mainly introduced into countries through contaminated consignments.The samples taken from imported consigments should be submitted to a laboratory for inspection.	P	**Japan** The content of "3. Detection" section covers only seeds but 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*
86	80	The samples taken from imported consigments should be submitted to a laboratory for ~~inspection.~~analysis	P	**Kenya** delete inspection *Category : TECHNICAL*
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*
88	80	The samples taken from imported ~~consigments~~ consignments should be submitted to a laboratory for inspection.	P	**Thailand** *Category : EDITORIAL*
89	80	~~The samples taken from imported consigments should be submitted to a laboratory for inspection.~~	P	**COSAVE** *Category : TECHNICAL*
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*
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*
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*

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*
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*
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*
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*
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*
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*
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 procedures from imported/exported consignments not for sampling procedures for field survey *Category : SUBSTANTIVE*
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*
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*).	P	**European Union** Delete 'lot' - it is redundant. *Category : EDITORIAL*

		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.		
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*
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*
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*
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*
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	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*

		should be submitted to ~~have been contaminated with~~ 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*
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*
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*
110	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	**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 : 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	P	**Ghana** *Category : EDITORIAL*

		suspected to have been contaminated with *Striga* should be sampled in accordance with ~~ISPM~~ ISPM No. 31.		
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 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*
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 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	**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. *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	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*

		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.		
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*
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 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.~~	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*
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	C	**EPPO** This paragraphe is absolutely unclear it should be rewritten to provide the appropriate guidance for sampling.

		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.		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*
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 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	**Uruguay** We suggest the TPDP to simplify the description of the sampling procedure as per our general comment *Category : SUBSTANTIVE*
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	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*

		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.		
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*
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 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	**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*
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	P	**Brazil** We are suggesting these changes because ISTA recommends the "spoon method" instead of the "hand halving method" to obtain

		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).		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*
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*
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*
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*
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	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.

		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.		in Israel if a larger sample is received the sample is divided by hand only. *Category : TECHNICAL*
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*
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*
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*
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 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*
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*
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*
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 bags to use for sample washing, need to be specified in detail. *Category : SUBSTANTIVE*
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*

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*
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*
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), making sure there are no remaining seeds in the brush or the collecting pan.	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 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*
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 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. Illustration can be provided by an Israelian expert or EPPO on request. *Category : TECHNICAL*
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*

141	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** It is necessary to clarify which surfactant should be *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*
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*
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*
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*
3.2.2 Dry sieving				
146	92	**3.2.2 Dry sieving**	P	**Ghana**

				Category : 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*
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 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	**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*
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*

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 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** 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*
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*
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 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	**Uruguay** For consistency *Category : TECHNICAL*

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*
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 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** 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*
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*
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	C	**COSAVE** For consistency

		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.		*Category : TECHNICAL*
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*
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*
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 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	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*

		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*
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 determination, but until methods can be simplified and uniform they are of limited value for phytosanitary purposes.	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*
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*
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	C	**EPPO** Important data from molecular research on Striga is available (refer to information sources for these studies) *Category : SUBSTANTIVE*

		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.		
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 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	**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*
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*
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 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	**Peru** El texto se borra porque es redundante, ya fue mencionado en el punto 3.1. *Category : TECHNICAL*

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*
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 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	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*

		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.		
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*
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 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	**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? *Category : SUBSTANTIVE*
172	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	**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*
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*
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 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	**Japan** It might be better to add photographs that show morphological features of Alectra if any. *Category : TECHNICAL*
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*
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*
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*
178	103	~~Size~~ Length **(mm)**	P	**Australia** Suggested change to be more precise. (unit given is mm) *Category : EDITORIAL*
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*
180	113		C	**United States of America** It is really difficult to read the scale for the pictures *Category : TECHNICAL*
181	114	*S. ~~generioides~~gesnerioides*	P	**Argentina** *Category : EDITORIAL*
182	114	*S. ~~generioides~~gesnerioides*	P	**Australia** Clarification on spelling *Category : EDITORIAL*
183	114	*S. generioides*	C	**Uruguay** S. gesnerioides *Category : EDITORIAL*

184	114	*S~~. generioides~~.gesnerioides*	P	**Peru** *Category : EDITORIAL*
185	114	*S. generioides*	C	**Indonesia** this species may Striga gesnerioides *Category : EDITORIAL*
186	114	*S. ~~generioides~~gesnerioides*	P	**COSAVE** *Category : EDITORIAL*
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*
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*
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*
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*
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*
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*
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:	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).

		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).		Why comparing to tobacco seed is relevant? For inspectors of area where no tobacco is cultivated it is probably not very meaningful. *Category : TECHNICAL*
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 the length of a tobacco seed (Cochrane and Press, 1997).	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*
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*
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*
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*
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*
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*
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*
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 stems emerge, *Striga* is already growing below the soil surface and damaging 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. *Category : SUBSTANTIVE*

		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.		
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*
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 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.	P	**United States of America** correction *Category : TECHNICAL*
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*

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*
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*
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 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*
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*
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*
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*
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*
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*
214	159	Usually ~~unbranched~~branched	P	**Australia** S. hermonthica is usually branched (para 169 row-1 confirms this). table 2 states 'usually unbranched'. *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*
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*
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*
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 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*
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*
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*
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; 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** This information should be given also for S. asiatica. *Category : SUBSTANTIVE*

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*
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*
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 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** Unfortunately, it is not comparable to S. asiatica for which only the tube length is given, not the whole corolla. *Category : SUBSTANTIVE*
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*
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*
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	C	**EPPO** Perennial with branched reddish or yellow-green branched stem

		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).		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*
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*
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*
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 pink or light purple, rarely white (Figures 4C and 4D; Mohamed *et al*., 2001).	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*
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*
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	C	**EPPO** Height -more than 60 cm. stem - hair-rough, slightly branched, has few leaves.

		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).		Leaves - lower - opposite; top regular. (GP Moskalenko Quarantine Weed Plants of Russia) *Category : SUBSTANTIVE*
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*
235	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~~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.	P	**Japan** There are no description about Figure 5A and 5B. *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*
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*
9. Figures				
238	202	**9. Figures**	C	**Indonesia** Indonesia proposes the consistency of the font on scale *Category : EDITORIAL*
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*
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*
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*
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*