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The International Treaty

ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE



Item 13 of the Draft Provisional Agenda

THIRD MEETING OF THE *AD HOC* ADVISORY TECHNICAL COMMITTEE ON THE STANDARD MATERIAL TRANSFER AGREEMENT AND THE MULTILATERAL SYSTEM

New Delhi, India, 26-28 June 2012

MISCELLANEOUS QUESTIONS FOR IN-SESSION CONSIDERATION¹

I. INTRODUCTION

1. The Terms of Reference established by the Governing Body at its Fourth Session stipulates that

the Ad Hoc Advisory Technical Committee will advise the Secretary on implementation questions raised by users of the Standard Material Transfer Agreement and the Multilateral System, which the Secretary brings to their attention on the basis of questions addressed and forwarded to the Secretary by Contracting Parties, international centres having signed agreements with the Governing Body under Article 15 of the Treaty and other users of the Standard Material Transfer Agreement.

2. This document contains a number of miscellaneous enquiries and questions received by the Secretariat from users of the Multilateral System (MLS) and the Standard Material Transfer Agreement (SMTA) since the Fourth Session of the Governing Body. These questions are being brought to the attention of the Committee for advice and guidance and, if deemed appropriate, further work.

II. RESTORATION OF BREEDING LINES

3. An international Centre, which is signatory to an agreement with the Governing Body under Article 15 of the Treaty, received a request from the director of a breeding programme in an agricultural university ("the breeder") in what has subsequently become the territory of a Contracting Party, to have some breeding lines restored to it. The materials had been bred and sent by the breeder to various other organizations, which in turn sent the material to the Centre prior to the entry into force of the Convention on Biological Diversity. The Centre included the materials in the collection which it subsequently placed under the auspices of the FAO, as part of

¹ In accordance with the request of the *Ad Hoc* Technical Advisory Committee, and the Terms of Reference established by the Governing Body, this document was prepared for the exclusive purpose of facilitating the Committee's deliberations. Any opinion or position expressed in the document is not to be attributed to the Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture.

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the international network of ex situ collections provided for in Article 7 of the International Undertaking on Plant Genetic Resources, designated to be held by the Centre in trust for the benefit of the international community, pursuant to an agreement signed by the Centre and the FAO in October 1994..

4. The Committee had, at its second meeting, deliberated on a related issue of whether restoration of germplasm to an original provider has to be under the SMTA, and provided an opinion on restoration of plant genetic resources for food and agriculture. In the view of the Committee, an understanding covering all situations could be that:

“restoration” in practice means the return of samples of plant genetic resources for food and agriculture to the Provider or the competent authority of the territory in which they were collected from in situ conditions or which bred the plant genetic resources for food and agriculture in its programmes or to the legal or natural person that placed the plant genetic resources for food and agriculture in the Multilateral System.

5. The Committee concluded that restoration does not qualify as an act of facilitated access requiring the use of an SMTA.²

6. The question arising from this current case is whether the SMTA should or not be used in sending the requested material to the breeder referred to above, bearing in mind the definition of restoration set forth by the Committee and the fact that the material is now under the purview of the Multilateral System. The Committee may wish to advise on this issue

III. GENERA AND SPECIES OF ANNEX I CROPS

7. A genebank manager, who is responsible for the documentation system of a web-based catalogue that provides information about *ex situ* plant collections they maintain, has been asked to develop a checklist of genera and species of the crops listed in *Annex I* to the Treaty, in order to determine the percentage of material in the catalogue that is available under the Multilateral System. He has approached the Secretary to clarify which genera and species of the *Annex I* crops are to be considered as part of the Multilateral System.

8. *Annex I* to the Treaty is divided in two parts, one dealing with food crops and the other with forages. The first part is organised in three columns. The first column lists the “crop”; the second lists the “genus” and the third contains “observations”.

9. In the first and second columns, three are stated as “et al.”, that the genebank manager finds difficult to interpret. In the third column, the observations appear to be of various nature. In some cases, they are addressed to both genera and species. In some other cases, they deal with genera only. Some observations make an exception to species included, whereas some others only specify the species to be included. The possibility of taxonomical changes of the genera and species, which is a common practice in taxonomy, is also to be considered. One of the questions in this case is how *Annex I* would reflect the splitting of genera or species for a certain crop. *Appendix I* to this document contains a brief outline of some of the issues that have been identified by the user in this context.

10. The Committee may wish to refer to the text of *Annex I* to the Treaty, which is reproduced in the *Appendix II* to this document, and advise the Secretary on the response to be given to the user of the Multilateral System, including possible further consideration of the issue at its next meeting and indicating any additional background information it might require for that purpose.

² IT/AC-SMTA-MLS/2/10/Report, Appendix 3. The report is available at http://www.planttreaty.org/sites/default/files/ac_smta_mls2_repe.pdf

IV. HANDBOOK TO THE IMPLEMENTATION OF THE MULTILATERAL SYSTEM

11. At its second meeting, the Committee favorably appraised the draft *Handbook to the Implementation of the Multilateral System of the International Treaty on Plant Genetic Resources for Food and Agriculture* (Handbook), as a useful additional information tool to provide assistance to users of the Multilateral System and the SMTA.

12. The Committee encouraged the Secretary to continue the development of the draft Handbook, including through its progressive updating with the decisions of the Governing Body and the outcomes of the work by its subsidiary bodies as well as with relevant information received from Contracting Parties, users of the Multilateral System and other stakeholders.

13. Members of the Committee further agreed that they would provide whatever inputs and information they could, in the course of the further development of the Handbook, including on inclusion of material in the Multilateral System by natural or legal persons.³ However, only one set of comments was received by the Secretary and the initiative was not considered by the Governing Body at its Fourth Session. The current draft of the Handbook is provided for the information of the Committee in document IT/AC-SMTA-MLS 3/12/Inf. 2.

14. The Secretariat has received some enquiries about the status and further development of the Handbook, and would wish to seek the views of the Committee on the possible next steps, in particular, in the context of some of the collaborative capacity building initiatives currently being undertaken by the Secretariat.

³ IT/AC-SMTA-MLS/2/10/Report, paras. 61 to 65.

APPENDIX I

Taxa list for the Annex 1 crops

When transferring the crops listed on *Annex I* of the ITPGRFA to a list of taxa, a number of issues arise that relate mainly to unclear definition of the material covered, and material excluded. There are also some double occurrences and confusing remarks.

Unclear definition

- *Are the wild related species of breadfruit included?* The crop 'Breadfruit' is *Artocarpus altilis*, but are the wild species *A. camansi* and *A. mariannensis* also included?
- *The description of the crop 'Wheat' is unclear.* How to interpret 'Triticum et al. including *Agropyron*, *Elymus*, and *Secale*'? In this list complete, or does it imply that all related genera such as *Aegilops* are included? In some taxonomic systems *Aegilops* becomes part of *Triticum*.
- *Citrus rootstock.* Genera *Poncirus* and *Fortunella* are included as root stock to the crop Citrus. Does this imply that the entire genera can be included? And the intergeneric hybrid *Citrofortunella*?
- *Boundaries of some crops are unclear.* If the crop 'Sunflower' genus '*Helianthus*' includes the entire genus, it would also include Jerusalem artichoke (*Helianthus tuberosus*), which is a completely different crop; is that intended, or is it intended to only include the crop sunflower (*Helianthus annuus*)?
- *The situation in Solanum is unclear.* For the crops potato and eggplant, reference is made to the *Solanum* sections 'tuberosa' and 'melongena'. It is hardly possible to find a list of species included in these sections, and probably taxonomists do not agree about it. This is an important issue since tomato, which is not on annex 1, is now treated as *Solanum* as well. The addition 'excluding *Solanum phureja*' is difficult to interpret. A PNAS publication from a few years ago (Spooner *et al* 2007) showed that at a molecular level there is no essential difference between *S. pureja* and other diploid tuber-bearing species, and he grouped them all in *S. tuberosum* ssp. *andigenum*. This group clearly also includes *S. andigenum* which is implicitly included in the current list.
- *Some taxonomic names used in the list are either unknown or very uncommon* The species '*Trifolium agrocicerum*' in the list with forage legumes, is unknown in literature. The genus '*Raphanobrassica*' listed under crop 'Brassica complex' is not often used, but probably refers to the intergeneric hybrid between *Brassica* and *Raphanus*: *Brassicoraphanus*.

Other un-clarities

- *Some genera appear in more than one crop.* The crop 'Rye' genus '*Secale*' appears as a separate entry but also as genus as part of the crop 'Wheat'. The forage legume '*Lathyrus*' is listed separately with six species, but is also included in its entirety as the crop 'Grass pea', implying that all species are included. The forage grass '*Agropyron*' is also listed under the crop 'Wheat'. The crop 'Triticale' is listed as a separate crop, where both *Triticum* and *Secale* are included. Does this imply that the other intergeneric hybrids of the listed genera are not included?
- *The information under the heading 'Observations' is either redundant or confusing.* The crop 'Brassica complex' has as observation 'Genera included are: *Brassica*, *A Armoracia*, *Barbarea*, *Camelina*, *Crambe*, *Diplotaxis*, *Eruca*, *Isatis*, *Lepidium*, *Raphanobrassica*, *Raphanus*, *Rorippa*, and *Sinapis*. This comprises oilseed and vegetable crops such as cabbage, rapeseed, mustard, cress, rocket, radish, and turnip. The species *Lepidium meyenii* (maca) is excluded.' The part from 'This comprises .. ' to '.. turnip.' can only cause confusion.

Outcome preliminary analysis

The taxonomy of the USDA Grin-Taxis was used, which covers a very extensive list of taxa each with a proposed 'valid name'. This allows mapping the taxonomic names from different taxonomical systems on one 'backbone' of valid names.

Based on the following arbitrary decisions a preliminary analysis was made: breadfruit includes its wild species, *Aegilops* is part of the wheat complex, the complete genera of *Poncirus* and *Fortunella* are included in the *Citrus* complex, but not *a priori* the intergeneric hybrids, and the entire genus *Helianthus* is included. For the *Solanum* issue: as a result of difficulties in finding information about the potato - *Solanum* section *tuberosa* (a quote on the CGN website indicated that this section was also called section *petota*) it had to be assumed that the species in the section *petota* were the correct ones. But since also finding a species list for this section proved not easy, as a last resort the Wikipedia list with 20 species was used. To avoid further *Solanum* confusion, for the eggplant – section *melongena* - immediately the information from Wikipedia was used which listed 15 species in this section.

Since the excluded *Solanum phureja* was synonym with the valid name *Solanum tuberosum* ssp. *andigenum*, all synonyms of the latter were excluded (this is clearly not a proper solution, but used for the sake of this preliminary analysis).

Data processing

All taxa corresponding with the 64 items on the Annex 1 were selected from the complete list with GRIN taxa. The corresponding valid taxon was selected, and all synonyms of this valid taxon were also included. The same approach was followed for the excluded taxa (*Lepidium meyenii*, *Musa textilis*, *Phaseolus polyathus*, *Solanum phureja*, *Zea diploperennis*, *Z. luxurians* and *Z. perennis*): exclude named the taxa, and all synonyms of the corresponding valid names.

Results

Of all 99391 taxa listed in GRIN-tax (downloaded April 26. 2012), 6777 were initially included, of which 34 were subsequently excluded. The remaining 6743 taxa mapped on 2780 distinct valid taxa (as nominated by GRIN tax) – the 34 excluded taxa mapped on seven valid taxa. The final list with 2780 included valid taxa could be reduced since some taxa are parts of others (E.g. 'Poa annua' and 'Poa annua f. reptans') – this was not done, but illustrated in the table below.

Example *Lolium*

Valid Taxon	Corresponding Synonym Taxon
Lolium multiflorum	Lolium gaudinii Lolium italicum Lolium multiflorum Lolium perenne subsp. multiflorum
Lolium perenne	Lolium boucheanum Lolium marschallii Lolium perenne
Lolium rigidum	Lolium rigidum
Lolium rigidum subsp. lepturoides	Lolium loliaceum Lolium rigidum subsp. lepturoides Lolium rigidum var. rottbollioides Rottboellia loliacea
Lolium rigidum subsp. rigidum	Lolium rigidum subsp. rigidum Lolium strictum
Lolium temulentum	Lolium temulentum
Lolium temulentum f. arvense	Lolium arvense Lolium temulentum f. arvense Lolium temulentum var. leptochaeton Lolium temulentum var. muticum
Lolium temulentum f. temulentum	Lolium temulentum f. temulentum
Lolium x hybridum	Lolium x boucheanum Lolium x hybridum

could be reduced to:

Included Valid Taxa	Included Taxa (incl. synonyms)
Lolium multiflorum	Lolium arvense
Lolium perenne	Lolium boucheanum
Lolium rigidum	Lolium gaudinii
Lolium temulentum	Lolium italicum
Lolium x hybridum	Lolium loliaceum
	Lolium marschallii
	Lolium multiflorum
	Lolium perenne
	Lolium rigidum
	Lolium strictum
	Lolium temulentum
	Lolium x boucheanum
	Lolium x hybridum
	Rottboellia loliacea

APPENDIX II

International Treaty on Plant Genetic Resources for Food and Agriculture

ANNEX I

LIST OF CROPS COVERED UNDER THE MULTILATERAL SYSTEM

Food crops

Crop	Genus	Observations
Breadfruit	<i>Artocarpus</i>	Breadfruit only.
Asparagus	<i>Asparagus</i>	
Oat	<i>Avena</i>	
Beet	<i>Beta</i>	
Brassica complex	<i>Brassica</i> et al.	Genera included are: <i>Brassica</i> , <i>Armoracia</i> , <i>Barbarea</i> , <i>Camelina</i> , <i>Crambe</i> , <i>Diploaxis</i> , <i>Eruca</i> , <i>Isatis</i> , <i>Lepidium</i> , <i>Raphanobrassica</i> , <i>Raphanus</i> , <i>Rorippa</i> , and <i>Sinapis</i> . This comprises oilseed and vegetable crops such as cabbage, rapeseed, mustard, cress, rocket, radish, and turnip. The species <i>Lepidium meyenii</i> (maca) is excluded.
Pigeon Pea	<i>Cajanus</i>	
Chickpea	<i>Cicer</i>	
Citrus	<i>Citrus</i>	Genera <i>Poncirus</i> and <i>Fortunella</i> are included as root stock.
Coconut	<i>Cocos</i>	
Major aroids	<i>Colocasia</i> , <i>Xanthosoma</i>	Major aroids include taro, cocoyam, dasheen and tannia.
Carrot	<i>Daucus</i>	
Yams	<i>Dioscorea</i>	
Finger Millet	<i>Eleusine</i>	
Strawberry	<i>Fragaria</i>	
Sunflower	<i>Helianthus</i>	
Barley	<i>Hordeum</i>	
Sweet Potato	<i>Ipomoea</i>	
Grass pea	<i>Lathyrus</i>	
Lentil	<i>Lens</i>	
Apple	<i>Malus</i>	
Cassava	<i>Manihot</i>	<i>Manihot esculenta</i> only.
Banana / Plantain	<i>Musa</i>	Except <i>Musa textilis</i> .
Rice	<i>Oryza</i>	
Pearl Millet	<i>Pennisetum</i>	
Beans	<i>Phaseolus</i>	Except <i>Phaseolus polyanthus</i> .
Pea	<i>Pisum</i>	
Rye	<i>Secale</i>	
Potato	<i>Solanum</i>	Section <i>tuberosa</i> included, except <i>Solanum phureja</i> .
Eggplant	<i>Solanum</i>	Section <i>melongena</i> included.
Sorghum	<i>Sorghum</i>	
Triticale	<i>Triticosecale</i>	
Wheat	<i>Triticum</i> et al.	Including <i>Agropyron</i> , <i>Elymus</i> , and <i>Secale</i> .
Faba Bean / Vetch	<i>Vicia</i>	
Cowpea et al.	<i>Vigna</i>	
Maize	<i>Zea</i>	Excluding <i>Zea perennis</i> , <i>Zea diploperennis</i> , and <i>Zea luxurians</i> .

Forages

Genera**Species**

LEGUME FORAGES

<i>Astragalus</i>	<i>chinensis, cicer, arenarius</i>
<i>Canavalia</i>	<i>ensifolmis</i>
<i>Coronilla</i>	<i>varia</i>
<i>Hedysarum</i>	<i>coronarium</i>
<i>Lathyrus</i>	<i>cicera, ciliolatus, hirsutus, ochrus, odoratus, sativus</i>
<i>Lepedeza</i>	<i>cuneata, striata, stipulacea</i>
<i>Lotus</i>	<i>corniculatus, subbiflorus, uliginosus</i>
<i>Lupinus</i>	<i>albus, angustifolius, luteus</i>
<i>Medicago</i>	<i>arborea, falcata, sativa, scutellata, rigidula, truncatula</i>
<i>Melilotus</i>	<i>albus, officinalis</i>
<i>Onobrychis</i>	<i>viciifolia</i>
<i>Ornithopus</i>	<i>sativus</i>
<i>Prosopis</i>	<i>affinis, alba, chilensis, nigra, pallida</i>
<i>Pueraria</i>	<i>phaseoloides</i>
<i>Trifolium</i>	<i>alexandrinum, alpestre, ambiguum, angustifolium, arvense, agrocicerum, hybridum, incarnatum, pratense, repens, resupinatum, rueppellianum, semipilosum, subterraneum, vesiculosum</i>

GRASS FORAGES

<i>Andropogon</i>	<i>gayanus</i>
<i>Agropyron</i>	<i>cristatum, desertorum</i>
<i>Agrostis</i>	<i>stolonifera, tenuis</i>
<i>Alopecurus</i>	<i>pratensis</i>
<i>Arrhenatherum</i>	<i>elatius</i>
<i>Dactylis</i>	<i>glomerata</i>
<i>Festuca</i>	<i>arundinacea, gigantea, heterophylla, ovina, pratensis, rubra</i>
<i>Lolium</i>	<i>hybridum, multiflorum, perenne, rigidum, temulentum</i>
<i>Phalaris</i>	<i>aquatica, arundinacea</i>
<i>Phleum</i>	<i>pratense</i>
<i>Poa</i>	<i>alpina, annua, pratensis</i>
<i>Tripsacum</i>	<i>laxum</i>

OTHER FORAGES

<i>Atriplex</i>	<i>halimus, nummularia</i>
<i>Salsola</i>	<i>vermiculata</i>
