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TWV/46/34
ORIGINAL: English
DATE: May 30, 2012

INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

TECHNICAL WORKING PARTY FOR VEGETABLES

Forty-Sixth Session
near the city of Venlo, Netherlands, June 11 to 15, 2012

LEVELS OF UNIFORMITY ACCORDING TO THE STATE OF EXPRESSION OF OBLIGATORY DISEASE RESISTANCE CHARACTERISTICS AND VARIETIES NOT BRED FOR HAVING SUCH DISEASE RESISTANCE

Document prepared by an expert from the European Union

1. In agreement with the TWV Chairman, “Levels of uniformity according to the state of expression of obligatory disease resistance characteristics and varieties not bred for having such disease resistance” is proposed for discussion under agenda item 8 “Uniformity assessment”.

2. The Annex to this document contains a proposal for discussion.

[Annex follows]

ANNEX

LEVELS OF UNIFORMITY ACCORDING TO THE STATE OF EXPRESSION OF OBLIGATORY DISEASE RESISTANCE CHARACTERISTICS AND VARIETIES NOT BRED FOR HAVING SUCH DISEASE RESISTANCE

Introduction

1. The Community Plant Variety Office (CPVO) with the assistance of its entrusted examination offices for vegetables as well as the European Seed Association (ESA) creates its own technical protocols based upon the corresponding UPOV guideline for the same botanical taxon. The UPOV table of characteristics and accompanying explanations serve as the template, and on most occasions the vast majority of the characteristics are taken up in the CPVO protocol. This includes the disease resistance characteristics, and whether they should be observed compulsorily or not, although according to the prevailing conditions within the European Union (EU), deviations from the UPOV template within the corresponding CPVO protocol can also agreed upon for any particular characteristic.

2. The CPVO has had recent discussions with its entrusted vegetable examination offices as well as with representatives of European vegetable breeding companies regarding the implementation of obligatory disease resistance characteristics in this crop sector. It would appear that in some parts of the European Union certain obligatory disease resistance characteristics are not important according to the local conditions, and as a result breeding companies from that area are not breeding for those particular traits. The consequence of not selecting for either the resistance or the susceptible trait, is that even if a variety is principally susceptible, then it also has to be uniform in its susceptibility, otherwise the variety risks being rejected for lack of uniformity – this adverse effect, the breeders in question argue, is unreasonable, since there is no point investing breeding effort to create a uniform susceptible varieties.

Outcome of discussions at the EU level

3. Since the CPVO protocols are not only applicable for DUS testing for Community plant variety rights but also for entry into the EU's Common Catalogue, national authorities in the EU have also agreed to use the CPVO protocols for their national PBR procedures. This harmonisation and commonality of DUS testing is one of the pillars upon which the "one key, several doors" principle is built, which allows for an exchange of technical reports from entrusted examination offices for official registration purposes (both plant breeders' rights and national listing). This is a viewpoint supported by the CPVO, the entrusted examination offices and ESA, therefore there was no wish to deviate from the present system an allow a more flexible use of CPVO technical protocols, particularly in relation to the observation of compulsory disease resistance characteristics, where considerable effort had been made over the years between the interested stakeholders to have a harmonised approach.

4. The result of the discussions was that CPVO vegetable protocols which have compulsory disease resistance characteristics have been left untouched regarding these particular traits. This conclusion does not please all stakeholders though, particularly those that feel it is unjust to impose certain disease resistance to defined areas of the EU where such diseases are of no economic importance.

Proposal to evaluate different uniformity levels for obligatory disease resistance characteristics

5. During the discussions between the EU stakeholders on the above subject matter, a proposal was made to investigate another possibility for those varieties for which no selection work had been done on the disease resistance. Initially it was proposed to drop the current "absent" and "present" states of expression for most disease resistances in vegetables, and to adopt instead three states of expression, namely: "resistant", "susceptible" and "mixed", where the "mixed" level would be applicable to those varieties for which there had been no breeding effort on the particular disease resistance characteristic. However, this particular proposal was argued against by most of the stakeholders because having a "mixed" level would go against UPOV principles, since it would not fulfil the conditions of a valid characteristic.

6. Notwithstanding, these stakeholders also believed that this proposal could be reviewed to better reflect the reality in certain species and varieties within that species, so that instead one could have a different level of uniformity in disease resistances for certain types of varieties. A similar principle to this is already applied in certain UPOV vegetable guidelines where hybrid varieties are to be found. An example of this is the carrot guideline TG/49/8 where section 4.2 on uniformity states:

> 4.2.2 Cross-pollinated varieties: The assessment of uniformity for cross-pollinated varieties should be according to the recommendations for cross-pollinated varieties in the General Introduction. For the characteristics external color of the root (characteristic 13) and color of core of root (characteristic 19), a population standard of 2% and an acceptance probability of 95% should be applied.

Similarly, in lucerne there is no obligation for the candidate variety to be uniform for certain disease resistances, since this can be explained by the genetic structure of the variety. Specifically, section 2.3.2.2 of TGP/12/2 states:

> "In some cross-pollinated species (e.g. lucerne), disease resistance (e.g. resistance to Colletotrichum trifolii) is assessed as the percentage of resistant plants within the population. In those cases a continuous range of variation could be observed across varieties. This can be treated as a true quantitative characteristics (1-9 scale) and appropriate statistical methods can be applied in the analysis of data".

7. Thus from the two examples illustrated above, perhaps the possibility exists to accept the principle of having different uniformity levels for disease resistance characteristics according to the vegetable species and type of variety in question. From a purely hypothetical perspective, if such a principle were to be applied to tomato, which is a recently adopted UPOV vegetable guideline with a large number of disease resistance characteristics (including several obligatory ones), the following wording could be envisaged under section 4.2 on uniformity:

8. For the assessment of uniformity, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 20 plants, 1 off-type is allowed. In addition, a population standard of 10% with the same acceptance probability should be applied in the case of disease resistance characteristics (char. 46-61) for plants of varieties expressing a susceptible level of resistance for those particular characteristic. In the case of a sample size of 10 plants, the additional maximum number of clearly recognizable resistant plants would be 3.

9. The CPVO therefore kindly requests the Technical Working Party for Vegetables to discuss whether the principle of having different levels of uniformity according to the state of expression of [obligatory] disease resistance characteristics, would be in conformity with the UPOV principles on the conditions and acceptability of a characteristic for DUS testing purposes.

[End of Annex and of document]