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# INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

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## TECHNICAL WORKING PARTY FOR AGRICULTURAL CROPS

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#### REVISION OF DOCUMENT TGP/7: ADDITIONAL STANDARD WORDING FOR A GROWING CYCLE FOR TROPICAL SPECIES

*Document prepared by the Office of the Union and an expert from New Zealand*

1. The purpose of this document is to consider a proposal for Additional Standard Wording (ASW) for growing cycle for tropical species for inclusion in a future revision of document TGP/7: "Development of Test Guidelines".

2. The following abbreviations are used in this document:

TC:	Technical Committee
TC-EDC:	Enlarged Editorial Committee
TWA:	Technical Working Party for Agricultural Crops
TWC:	Technical Working Party on Automation and Computer Programs
TWF:	Technical Working Party for Fruit Crops
TWO:	Technical Working Party for Ornamental Plants and Forest Trees
TWPs:	Technical Working Parties
TWV:	Technical Working Party for Vegetables

3. The structure of this document is as follows:

BACKGROUND .....	1
CURRENT WORDING .....	2
PROPOSED NEW ADDITIONAL STANDARD WORDING .....	2

#### ANNEX: EXPLANATION FOR ADDITIONAL STANDARD WORDING: GROWING CYCLE DEFINITION FOR SPECIES THAT HAVE NO DEFINED SEASONALITY OR INDETERMINATE GROWTH

#### BACKGROUND

4. The Technical Committee (TC), at its forty-ninth session held in Geneva from March 18 to 20, 2013, invited the TWF to consider whether it would be necessary to develop a new ASW for a growing cycle for tropical species (see document TC/49/41 "Report on the Conclusions", paragraph 80).

5. Subsequent to the TC meeting, the expert from New Zealand agreed to propose ASW to be presented at all the TWP sessions in 2013. The Annex to this document provides background information on the need for ASW, prepared by Mr. Chris Barnaby (New Zealand).

CURRENT WORDING

6. The existing guidance in document TGP/7 on the growing cycle for fruit species is as follows:

GN 8 (TG Template: Chapter 3.1.2) – Explanation of the growing cycle

Chapter 3.1 makes reference to the number of growing cycles. In some cases it may be necessary to clarify what is meant by a growing cycle. Additional standard wording has been developed for some situations (see ASW 3).

ASW 3 (TG Template: Chapter 3.1.2) – Explanation of the growing cycle

*(a) Fruit species with clearly defined dormant period*

“3.1.2 The growing cycle is considered to be the duration of a single growing season, beginning with bud burst (flowering and/or vegetative), flowering and fruit harvest and concluding when the following dormant period ends with the swelling of new season buds.”

*(b) Fruit species with no clearly defined dormant period*

“3.1.2 The growing cycle is considered to be the period ranging from the beginning of active vegetative growth or flowering, continuing through active vegetative growth or flowering and fruit development and concluding with the harvesting of fruit.”

*(c) Fruit species*

In the case of Test Guidelines covering fruit species, the following sentence may be added in Chapter 3.1:

“In particular, it is essential that the [trees] / [plants] produce a satisfactory crop of fruit in each of the two growing cycles.”

PROPOSED NEW ADDITIONAL STANDARD WORDING

7. The expert from New Zealand proposes to add a new Additional Standard Wording for growing cycle of tropical species, as follows:

*New (after (b)): Tropical fruit species*

The growing cycle is considered to be the period ranging from the beginning of flowering of an individual flower or inflorescence, through active flowering and fruit development and concluding with fruit harvest.

8. The TWA is invited to consider the proposed ASW for growing cycle of tropical species, as set out in paragraph 7.

[Annex follows]

EXPLANATION FOR ADDITIONAL STANDARD WORDING: GROWING CYCLE DEFINITION FOR SPECIES THAT HAVE NO DEFINED SEASONALITY OR INDETERMINATE GROWTH

*prepared by an expert from New Zealand*

### **Introduction**

Test Guidelines for fruit species currently use the following standard wording for defining the growth cycle.

#### For deciduous species

*The growing cycle is considered to be the duration of a single growing season, beginning with bud burst (flowering and/or vegetative), flowering and fruit harvest and concluding when the following dormant period ends with the swelling of new season buds*

#### For evergreen species

*The growing cycle is considered to be the period ranging from the beginning of active vegetative growth or flowering, continuing through active vegetative growth or flowering and fruit development and concluding with the harvesting of fruit.*

The definition for the evergreen species takes account of the situation where there is no clear dormant season such as for avocado. This also allows for the possibility of all growth stages being present on a tree at the same time, however the definition still has the element of seasonality or dominant growth stage, where there is a definable vegetative, flowering and fruiting period, even if there is overlap. For fruit species with an indeterminate growth habit, such as some tropical species, plants produce leaves, flowers and fruit all at the same time, all at different stages, on different parts of the same plant and it is difficult to even broadly define the vegetative, or flowering or fruiting period. The basis of both growing cycles is on a whole plant approach, with there being a dominant growth stage on all plants in the trial at any one time.

### **A definition for fruit species with indeterminate growth**

Taking into consideration that current definitions do not fully take into account the absence of any seasonality at all and that plants in a trial could all be vegetative, flowering and fruiting all at the same time there is a need to more clearly define a growth cycle for DUS testing these types of varieties. The definition for fruit crops should focus on flowering and fruiting as for many tropical species vegetative growth, in varying degrees, is essentially continuous.

#### Suggested wording

*The growing cycle is considered to be the period ranging from the beginning of flowering of an individual flower or inflorescence, through active flowering and fruit development and concluding with fruit harvest.*

This wording removes the need for the whole plant to follow through predominant growth stages and allows for plant parts to follow through the growth stages independent of what else is happening on the plant. A DUS tester can assess a single inflorescence of flower from emergence to fruiting. This approach could be carried out at least twice per trial plant in a defined period, according to the morphology of that species and could satisfy the requirement for two independent growing cycles. Vegetative characteristics can be assessed within the flowering to fruiting cycle.

#### An example

Palm species grow indeterminately, were the palm apex remains vegetative and inflorescence and fruit are produced periodically from the stem. At any one time a palm can be actively growing, flowering and fruiting with no clear period where one stage is dominant. An inflorescence is produced periodically which in due course produces fruit. In this case the first inflorescence could be ignored to satisfy the general provision that the palm has flowered at least once before evaluation begins. The evaluation could begin on the second inflorescence and this is assessed through to fruiting, a growing cycle. The same could be followed for the third inflorescence, the second growing cycle and applied to each palm in the trial.