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PROBLEMS WITH TESTING FOR CLAIMS OF EARLINESS IN APPLES

Document prepared by experts from New Zealand and the United Kingdom

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Introduction

The United Kingdom, South Africa and to a lesser extent New Zealand are receiving increasing numbers of applications for varieties claiming early maturity. Problems are occurring when distinctness cannot be determined by morphological characters. The only claim to distinctness is early maturity.

The UPOV guideline for apple TG/14/8 states that assessments of fruit characters are carried out at maturity for consumption or when the fruit is ripe for eating. A conflict has arisen between what the guideline requires and what apple breeders and national industries require. In many cases a variety found to mature early means earlier picking maturity and not earlier maturity for consumption. In the United Kingdom commercial harvest decisions for Cox and Jonagold type varieties are often based on fruit color rather than internal qualities. The current apple guideline does not offer any guidance on maturity for harvest or picking.

The needs of a national apple industry cannot be ignored. Varieties bred for particular storage qualities or for ripening off the tree have critical harvest times. The variety may be harvested at an optimum starch level and placed in storage. The starches later break down to sugar and becomes more acceptable for consumption. New Zealand experience with Gala type varieties suggest that ripening off the tree is important to the final quality. These variety types do tree ripen well, however are normally harvested before `tree ripe maturity' in commercial orchards. To harvest at maturity for consumption would give a very different profile to what occurs in commercial practice.

The determination of earliness is a particular problem with mutants. With many mutant varieties there are no morphological characters that can be used for distinctness. It is these varieties, where the accurate evaluation of earliness is critical and ultimately decides whether the variety is distinct or not, that are proving difficult to test. There is less of a problem with early maturing seedling varieties.

Key Questions

Should national DUS testing authorities follow harvest practices in commerce if they conflict to a large extent with the UPOV guideline?

What is the best way to address this problem so that there is some continuity in testing between UPOV member states?

Should there be an accepted UPOV protocol for testing earliness in mutant varieties and varieties bred for off the tree ripening?

Possible Solutions for Discussion

The adoption of common test methods to assess maturity, e.g. starch tests. The methods could be added as an annex to TG/14/8.

A general understanding within UPOV of how early is early: 3,5,7,10 days apart from the nearest variety?

Close liaison with the breeders to understand fully why they believe the variety is early.

The need to understand very clearly how the seedling or mutant claims to be different from the parent(s), similar varieties and other type varieties around the claimed maturity date.

The use of fruit color to determine maturity rather than eating qualities. The intensity of fruit color increases the longer a fruit is on the tree. The intensity of color continues to increase in storage, however, experience in New Zealand suggest that the amount of color after harvest does not change. In the United Kingdom, a mutant of Jonagold appeared to increase the amount of fruit color after harvest. Could the amount of fruit color be used to indicate maturity?

A possible compromise? Apple varieties bred to `ripen off the tree' could be harvested according to industry directed criteria, but actually tested after a defined period in storage when at maturity for consumption. This may satisfy the requirements of commercial breeders and selectors, and the requirements of DUS testing and the UPOV guideline. This practice is followed in New Zealand for the Gala type varieties.

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