Department of Primary Industries and Regional Development
GOVERNMENT OF WESTERN AUSTRALIA

fruitwest Co-operative Ltd.

bravo™ apple
LIKE NO OTHER™

ANABP 01Φ Russet Management

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Fruit russeting in apples may occur for reasons including adverse weather conditions, viruses, bacteria, fungi and reactions to some chemicals. Russetting occurs during initial fruit development when the cuticle does not expand adequately as internal fruit tissue grows and tiny cracks appear in the fruit skin. Cells die under these skin cracks causing russet to appear as the fruit grows. It is likely that multiple factors contribute to the severity of russet on the affected fruit.

The ANABP 01Φ variety may under some circumstances develop russet mainly at the stalk or stem end. Skin russeting does not affect flavour or eating quality of the fruit, but it can detract from the overall appearance. BRAVO™ specifications allows for russet from the stem to the shoulder of no more than 15mm radius and 10% of the apple's surface. Understanding the factors associated with russeting and taking the necessary precautions can improve both pack-out and returns.

Cold weather and rain in the period directly after full bloom may cause tan or corky russeting which is abundant around the stalk cavity. These markings can extend over the shoulder and onto the cheeks of the apple detracting from the overall appearance. A frost occurrence during or post flowering may injure the skin tissues and cause a ring of russet, or "frost rings" around the fruit.

These cold and wet conditions during and after flowering could also encourage infections of fungi and bacteria. This may enhance the likelihood of powdery mildew developing on the surface of the fruit and leaves which can be associated with fruit russeting. Russet from powdery mildew is grey or tan with a netted like appearance.

The use of Copper, Zinc or Lime Sulphur as a fungicide during the flowering and early fruit development may result in chemical phytotoxicity causing russeting. Calcium chloride or calcium nitrate can cause russet depending on concentration, temperature and number of applications. The use of some surfactants can also result in russeting, particularly during cool weather or slow drying conditions. Inefficient spraying

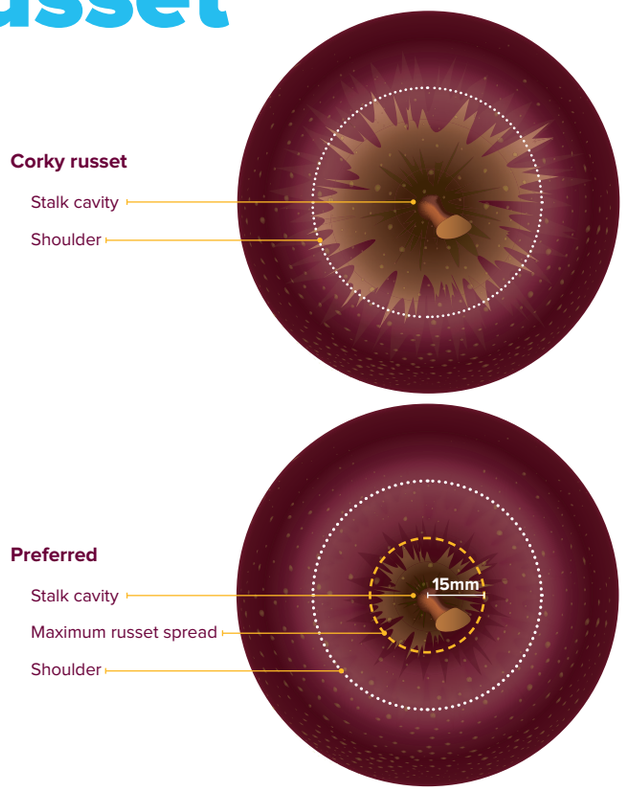

FIGURE 1: BRAVO™ corky russeting specification — 15mm radius

equipment and application, chemical mixing incompatibility and unfavourable weather conditions during or post spraying may also contribute. Russeting caused by spray materials is likely to be found on the lowest portions of the fruit where spray droplets accumulate.

The higher occurrence of russet has been noted on young ANABP 01Φ orchards where a heavy Nitrogen program is being used to promote tree growth. The Nitrogen promotes increased fruit cell enlargement resulting in larger fruit and increased likelihood of russet on apples from young trees.

Identifying the origin or cause of russet on affected fruit can be difficult in situations where multiple factors might have been involved because russet from various causes often results in similar injury patterns on fruit. However, being aware of the contributing factors and taking necessary precautions to manage the risk during flowering and early fruit development, is essential to reduce russet in ANABP 01Φ and increase the amount of fruit achieving the minimum specification for BRAVO™.

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