EastPack Update

23 October 2013

New Varieties – Getting Pollination Right

Pollination is one of the most important operations in the orchard cycle – getting it right can be the difference between an average crop and a fantastic one. The success of any pollination system whether bee or artificial supplementation, is timing. This has a huge influence on the size and dry matter of fruit – the higher the seed numbers the higher the dry matter, bigger the fruit and more trays per ha via a higher conversion of flowers to Class I trays.

What pollination approach is right for my orchard?

Deciding on which system depends on orchard factors eg. number of bee visits required, male varieties, male ploidy, weather, Psa, length of flower and bee receptivity, male synchronicity and amount of male flower present in orchard.

Gold3 is very attractive to bees and can pollinate relatively easily providing pollen isn't a limiting factor, requiring approximately 10 bee visits, similar to Hort16a. Green14, being most like Hayward, requires approximately 20 visits, while Gold9 sits in the middle requiring 15 visits.

Male variety, vine age and synchronicity play a huge role. At present the choice of male varieties is limited in our orchards due to Psa. Females may flower earlier or later than males, for example G9 and M33. Flowering timing may vary each season as the vine matures. For these reasons alone it is a good idea to have more than one male variety.

Matching ploidy levels of male and female plants will have an effect. Ploidy is defined as the number of sets of chromosomes in a cell (humans are diploid – 2x); Kiwifruit varieties can have different levels of ploidy:

Ploidy		**Variety**
Diploid	2x	Hort16a, Bruce, CK2
Tetraploid	4x	Gold3, Gold9, Green14, M91, M33
Hexaploid	6x	Hayward, Chieftian, M56, King

Pollen from higher ploidy males can be used successfully to pollinate female flowers with the same or lower ploidy. Therefore artificial pollination of G3, G9 and G14 (4x) can be successfully completed using Chieftain (6x) but not Bruce or CK 2 (x2).

Dry pollen works well in conjunction with bees; wet pollen works well when pollination conditions are less than ideal and it has the benefit of working without bees.

When applying wet pollen you need to think about stigma receptivity – how old can a flower be and still produce a full sized fruit.

Dry pollen applications make use of the Bees moving pollen within and between flowers; so how long the flowers are attractive to bees, that is producing pollen, must also be taken into consideration.

- G3: Flower is attractive to bees for 2 days, if applying dry pollen do so at 2 day intervals. Stigma is receptive for 2 days, wet pollen applications should also be 2 day intervals.
- G9: Flower is attractive to bees for 2 days, if applying dry pollen do so at 2 day intervals. Stigma is receptive for up to 7 days, wet pollen can be applied at up to 7 day intervals.
- G14: Flower is attractive to bees for 2 days, if applying dry pollen do so at 2 day intervals. Stigma is receptive for up to 5 days, wet pollen can be applied at up to 5 day intervals.

What does this all mean?

Assess synchronicity and flower numbers of male varieties in your orchard.

Supplemental pollen may be required to fill the deficit.

To get the best out of your pollen, apply dry every 2nd day through the flowering period at low rates.

Recommendations around rates depend on your situation but if applying every 2 days, use rates that are practical to apply; for example 100 – 150g per application adding up to a total amount per hectare of 250 to 500g/ha.

Wet pollen application may be required if conditions are less than ideal ie. cold or damp.

Did I get it right?

Pollination Assessments are a quick way of checking if you are getting pollination right on your orchard. This can be done simply by hand pollinating a hand full of flowers, and comparing fruit weights at harvest between hand pollinated and conventional. For more info on this visit the Zespri canopy website.

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