Fruit Set

See section Pollenisers *on page 37*

See section Flower Pruning *on page 13*

See section Nutrition *on page 17*

At least 6 honeybee hives per hectare should be in the orchard from when the flowers begin to open, spread evenly throughout the orchard in groups of 2-4 hives.

FLOWER DEVELOPMENT

In New Zealand, floral initiation occurs in late Autumn, flower bud development continues through winter and flowers begin opening in spring. In order to support floral development, it is important that trees have sufficient light, water and appropriate nutrition.

Avocado flowers open as a female, close, and open again as a male. A- and B-type avocado varieties have different flower opening patterns, and having a combination (e.g. B-Type Pollenisers for A-type Hass) increases the flowering overlap time for pollen transfer to occur.

Table 4: A- and B-type flowering patterns in ideal conditions.

	Day 1		Day 2	
Flowering type	**Morning**	**Afternoon**	**Morning**	**Afternoon**
A	Female			Male
B		Female	Male	

Temperatures affect flowering. Frost can cause damage to flower buds and flowers - severe frosts and late frosts occurring close to flowering are of the most concern. Also, temperatures below 5°C have been shown to reduce flower viability of flowers about to open or that have opened recently.

Avocado trees in New Zealand often produce a lot of flowers, however a normal fruit-set is about 0.3% of the flowers. Flower development places significant strain on the tree, so it is important to balance the tree and maintain carbohydrate reserves by pruning away excessive flower.

Figure 21: Avocado flowers open in the female (above) and male (below) phase.

POLLINISATION

Pollenisation is the transfer of pollen from the anther of a flower open in the male phase to the stigma of a flower open in the female phase. Honeybees are an important polleniser of avocados. For fruit-set, it is important to have pollinators present and active within the orchard. Hives should be brought into the orchard once the first open flowers are seen. Generally, 6-8 hives per ha spread throughout the orchard ensures that there is enough bee activity to assist in pollination. Avocado flowers are not the most attractive of food sources for bees, so it is important wherever possible not to have competing pollen sources within the immediate area. Also, make sure there is easy access to water for the bees.

Figure 22: Honeybee pollinating avocado flower

FERTILISATION

Fertilisation occurs when the pollen tube reaches the ovary. Fertilisation failure can result in cukes (a seedless, small, elongated avocado) – thought to be related to temperature.

FACTORS INFLUENCING FRUIT SET

- Temperature (prior to, during and after flowering).
- Bees – on cold, wet or windy days there is little bee activity and limited pollination.
- Flower amount.
- Pollen availability (including pollenisers).
- Water.
- Nutrients (particularly boron and calcium).