

## Pollination

Pear tree flowers need to be fertilised by pollen from a different tree if fruit are to develop. They require 'cross pollination' by pollinators that are usually insects, and typically bees. Insufficient pollination/fertilisation may result in reduced yields and misshapen fruit. Polleniser pear varieties must be planted to ensure bees can successfully pollinate as many flowers as possible.

When planning an intensive pear orchard you must:

- ensure adequate pollination through planting compatible varieties that flower at the same time as the main orchard varieties
- carefully plan the orchard configuration for effective polleniser arrangement
- ensure satisfactory bee populations in the orchard at flowering
- minimise competition from other flowering plants.

### Varieties for cross-pollination of pears

It is critical that pollenising varieties are compatible. The main variety and polleniser must also have flowering periods that coincide enough to ensure pollen is available when flowers are receptive early in their lifespan.

The following table lists compatible pollenisers for selected pear varieties.

Main Variety	Pollinator
Corella	Ya Li, Tsu Li
Lemon Bergamot	Josephine
Josephine	Packhams
Howell	Packhams
Abate Fetel	Williams, Beurre Bosc
Packhams	Josephine, Howell, Nijisseki
Williams	Beurre d'Anjou, Beurre Bosc
Comice	Beurre d'Anjou, Williams, Beurre Bosc
Beurre Bosc	Williams, Comice
Winter Nelis	Williams, Beurre Bosc

Table 1: Pollination table (adapted from Campbell (2002))

## **Planting polliniser trees**

Placement of polliniser trees in the orchard is particularly important in intensive production systems. Pollinisers need to be placed close to the target variety to ensure good pollination. Bees tend to fly down rows and not across them so full row systems of pollinisers (often used in old low density systems) have limited efficacy in intensive production systems. A more effective layout is one that has pollinisers evenly planted throughout every row.

## **Ensuring satisfactory bee populations at flowering**

Often growers will need to hire honeybee colonies during flowering as populations of wild or feral honeybees are too low to ensure adequate pollination. Bees can be killed as a result of pesticide application in the orchard so growers will need to ensure they plan pesticide application programs to avoid this. Growers should consult an apiarist and local expertise to determine honeybee requirements for their orchard.

### **Bee activity under hail netting**

In order to ensure adequate pollination under hail netting, there are a number of factors that need to be managed. These include:

- Placement of hives under the netting once flowering has commenced as bees will be less likely to fly into blocks covered by hail netting. If bees are introduced too early they will seek alternative nectar and pollen outside netted areas.
- Allowing an adequate gap between the top of the trees and hail net cover for optimum bee flight.
- Bees may become trapped in the netting when first introduced. These bees will die and be replaced by younger bees that have acclimatised to the conditions.
- Temporary removal of netting (or sections of netting) during flowering to allow bees to fly in and out and reduce numbers of trapped bees.

## **Minimise competition from other flowering plants**

Pear nectar is often less attractive to bees due to its low sugar content. This means if there are other flowering plants with nectar containing higher sugar content in close vicinity to the orchard, bees may be drawn away from the pears to forage. Control flowering weeds around the orchard to minimise competition.

## **Further Information**

These Australian and international sites may be useful for growers. However they are intended as an information source only. Any specific chemical or other control recommendations may be outdated or irrelevant for Australian conditions and growers should seek local advice.

## Australian Resources

### Bee Pollination

**Bee pollination benefits for pear and nashi:** Department of Agriculture and Food Western Australia (DAFWA): <https://www.agric.wa.gov.au/pome-fruit/recommendations-successful-apple-pollination>.

**Honeybee pollination of fruit tree crops:** Department of Environment and Primary Industries Victoria (DEPI) <http://www.depi.vic.gov.au/agriculture-and-food/horticulture/fruit-and-nuts/orchard-management/honeybee-pollination-of-fruit-tree-crops>

<https://www.agric.wa.gov.au/pome-fruit/recommendations-successful-apple-pollination?page=0%2C1>

**European pear varieties** – New South Wales Department of Primary Industries (NSW DPI): [http://www.dpi.nsw.gov.au/\\_data/assets/pdf\\_file/0013/120217/european-pear-varieties.pdf](http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0013/120217/european-pear-varieties.pdf)