

TREES FOR BEES CORNER

STAR PERFORMERS PART 7: MANNA ASH FOR LATE SPRING

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Trees for Bees has produced a series of fact sheets showcasing the 'best of the best' bee plants that will maximise nutritional benefits for your bees. In this issue of the journal, the team explains why manna ash is a 'star performer'. For more information, see www.treesforbeesnz.org.



Manna ash or flowering ash (*Fraxinus ornus*) is in the olive family (Oleaceae) and helps to solve the October crash problem.

Manna ash is a star performer because it fills in that late spring pollen dearth gap. It flowers profusely during what beekeepers call 'the October crash' when there are few pollen sources in some areas of both the North and South Island. This time of pollen dearth can be devastating to bee colonies wherever there is a lack of pollen after the willows finish flowering (when the bee colonies have built up beautifully) and before the clover flowers bloom. It depends on the diversity of late spring flowers near the apiary but many farmland areas have very low, or even no, diversity of flowers while the beekeepers await the clover bloom.

We were surprised to find no October crash (pollen dearth) problem at all when we were conducting research at Eastwood Hill National Arboretum in Gisborne in 2012. The diversity of northern hemisphere spring flowering trees in the arboretum was amazing and manna ash, along with oaks and maples etc., easily filled the pollen dearth gap after the peak willow flowering time. These are all good candidate trees that solve the October crash problem for beekeepers.

Fraxinus ornus (manna ash, flowering ash) is a medium-sized, round-headed, deciduous tree. It grows to a compact tree 15–25m tall (Salmon, 1999, p.283; Appletons, 2019; TERRAIN, 2019; Easy Big Trees, 2019) but likely shorter in New Zealand. It has a relatively short trunk and smooth bark. The trees are remarkable with a profusion of scented, white fluffy clusters of flowers (Figure 1) that bloom in October to November (Salmon, 1999; Leaflands, 2019). It occurs naturally in southern Europe from isolated populations in eastern Spain through to the Balkans and western Turkey.

Pollen

Manna ash flowers are both wind pollinated and insect pollinated, which explains the large anthers exposed to the wind at the same time as the showy petals that attract insects (Wallander, 2001). Bees easily gain access to the pollen since the abundant anthers hang out visibly among the long, slender white petals (Figure 2). The flowers are aggregated into large clusters and are densely packed. This means the bees can readily scramble among the flowers by hanging on to petals. The pollen loads in the bees' corbiculae are a golden yellow with a smooth surface (Figure 3).

Nectar

After much searching, it has not been possible to verify conclusively that the flowers produce any nectar but they probably do not. In the evolution of *Fraxinus* flowers from their insect-pollinated ancestors to the derived state of wind pollination, the manna ash sits in the middle as an intermediary step

Figure 2. The anthers are visible on the surface of the cluster of flowers, giving the bees easy access. Photo by Jean-Noël Galliot ©Trees for Bees.



Figure 3. The pollen loads packed by the bees are golden yellow and have a smooth surface. Photo by Jean-Noël Galliot ©Trees for Bees.



Figure 1. The manna ash tree has white fluffy clusters of flowers that are scented to attract insect pollinators. Photo by Jean-Noël Galliot ©Trees for Bees.



with adaptations to both wind and insect pollination (Wallander, 2001). The problem is that manna ash has a very unusual gender system in that different trees in the population have two forms: trees with all male flowers only and trees with hermaphrodite flowers (male and female in one flower) (Wallander, 2001). This is not a common gender system but it is suited to wind pollination because the pollen is so abundant and easily blown around by the wind—hence more trees with all male flowers are an advantage to the species. Meanwhile, having scented showy flowers is an advantage for insect pollination.

Unfortunately, when we studied manna ash in the field in Canterbury and Gisborne, we were not specifically looking for nectar production because we were focused on collecting pollen samples for the lab. We have found some indirect reports that there is no nectar produced but we have not verified this in the field ourselves.

Multiple uses

Manna ash was introduced to New Zealand by the early settlers and is now grown in parks and gardens throughout the country (Salmon, 1999) and is widely used as a street tree (Leaflands, 2019, Easy Big Tree, 2019). The

tree comes from southern Europe and south-west Asia (Salmon, 1999). The sweet sugary sap, called manna, has medicinal uses and has been commercially produced in Sicily, Italy (Grieve, 1931, p.67). The sap is extracted by making slits in the bark of the tree. The tree is mainly used as a showy ornamental.

Planting advice

Manna ash is a hardy tree and drought tolerant. We first found an isolated manna ash tree on a roadside exposed to frost and wind in the arable farming district of Canterbury. Manna ash is a very attractive specimen tree, well suited to parkland, garden and avenue/street planting. Plants are typically available in New Zealand as large-grade specimens, intended to provide immediate effect in landscaping, but smaller grade plants are also available if you can wait a few years until they flower.

Trees for Bees has used manna ash primarily as a specimen tree—either as single trees or in avenues/laneways on farms—providing essential late spring flowering (Figure 4). As a small tree, it can be planted closer together (8–10 metres). When planted as large-grade tree (PB45 to 60), they flower in the first or second year (Figure 5).

Figure 4. An avenue of manna ash underplanted with lavender makes a beautiful entrance at Kintail Honey Farm, January 2019. Photo: Mary-Anne Ward, Kintail Honey.

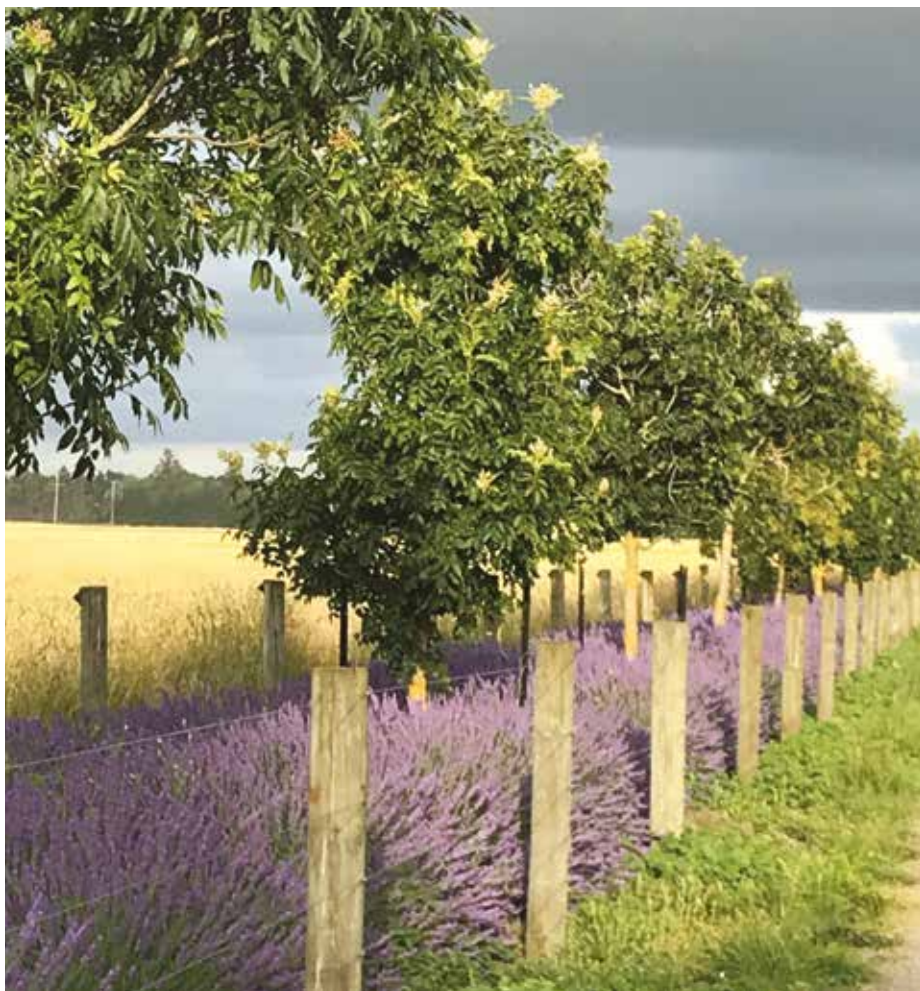


Figure 5. A young tree (P60 grade) flowering fully at one year after planting in spring 2015. Photo: Mary-Anne Ward, Kintail Honey.

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