

Increasing Native Pollinators Around Blueberry Farms

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- Pollination is important to produce many crops, including berries
- European honey bees are useful pollinators of blueberries, but native bees and other pollinators also play a role
- By supporting a mix of pollinators on-farm, growers can improve fruit set, increase berry size and uniformity

The spread of the Varroa mite has increased pressure on both managed and wild honey bee populations, making pollination less predictable and highlighting the importance of supporting alternative pollinators on-farm. International research across more than 40 crops has shown that wild pollinators can significantly improve fruit set compared with systems relying on honey bees alone. The strongest outcomes occur when both honey bees and native pollinators are present (Garibaldi et al., 2013), highlighting the value of integrated pollination strategies over single-species reliance.

Why pollination matters in blueberries

Blueberries have a distinctive bell-shaped flower that often requires buzz pollination (rapid wing muscle vibration) to release pollen from the anthers. Many native bees, including carpenter bees, blue-banded bees, and teddy bear bees, can vibrate their wing muscles to “buzz” the flower, dislodging large amounts of pollen in a single visit. Honey bees, by contrast, have limited access to the recessed anthers and typically collect smaller pollen loads per visit.

While highbush blueberry varieties can self-pollinate, cross-pollination generally improves both fruit set and berry size. Rabbiteye varieties, which are largely self-infertile, are highly dependent on insect-driven cross-pollination for commercial yields.

Understanding Australia’s Native Bees

Australia is home to more than 1,700 species of native bees, broadly grouped into social and solitary species, each with distinct behaviours and habitat needs.

Social Bees – Stingless Bees

Stingless bees (genera *Tetragonula* and *Austroplebeia*) live in colonies and are well suited to warmer, wetter regions, including much of north-eastern NSW. Their small body size allows them to forage directly inside blueberry flowers, making frequent contact with both anthers and stigmas. Studies have shown that combining stingless bees with honey bees can increase individual blueberry weight by up to 70% compared with using either species alone (Kendall et al. 2022).

Solitary Bees

Solitary bees make up the majority of Australia’s native bee species and include:

- **Blue-banded bees** – fast-moving buzz pollinators that nest in soil and clay structures
- **Carpenter bees** – large, powerful buzz pollinators that nest in soft timber
- **Reed bees** – cavity nesters that commonly use hollow plant stems, including raspberry canes
- **Teddy bear bees** – ground-nesting buzz pollinators widely distributed across eastern Australia
- **Furrow bees (*Lasioglossum* spp.)** – medium-sized ground nesters that carry large pollen loads

Each group contributes differently to pollination, and diversity across species helps ensure pollination continues under a wide range of weather and flowering conditions.

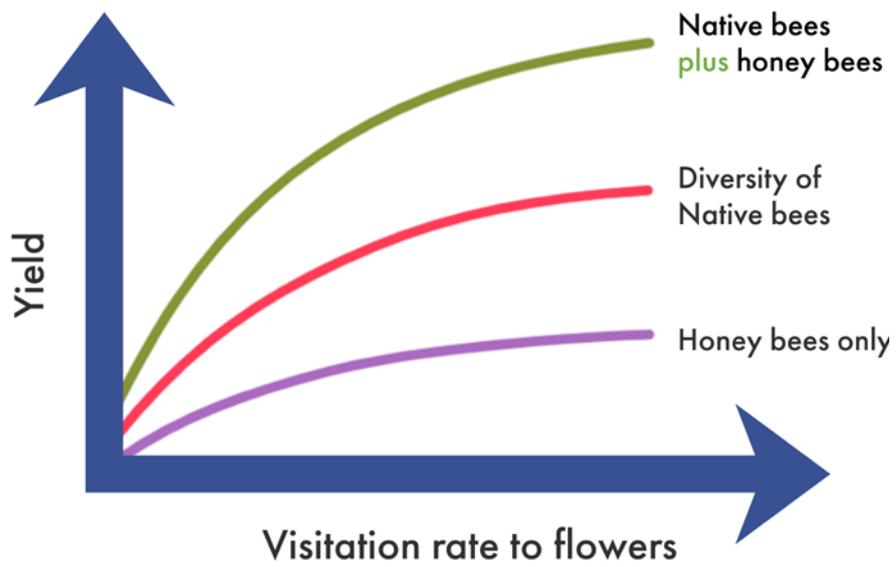


Figure 1. Having both honey bees and native bees provides the greatest increase in yields

Source: Australian Native bees, adapted from Garibaldi et al. (2013)



Figure 2. Stingless bees are very small

Photo credit: Alison Bockoven, 6legs2many

Figure 3. Examples of some of Australia’s many solitary bee species



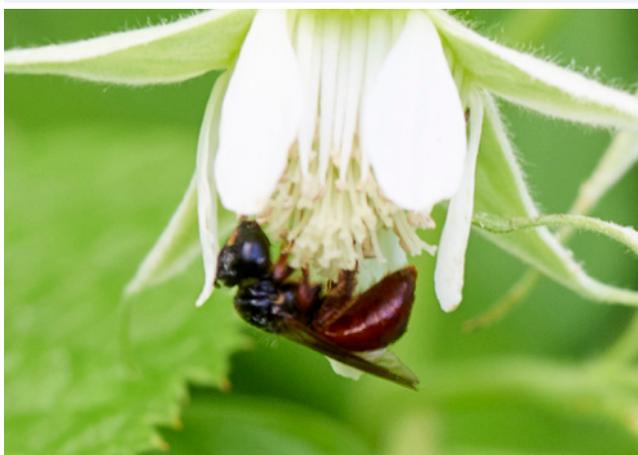
Furrow Bee Photo credit: Miriam Smith



Green Carpenter Bee Photo credit: Remko Leijts



Blue Banded bee Photo credit: Nick Volpe



Reed bee Photo credit: Alison Hoelzer

Table 1. Solitary native bee species and the states and territories where they can be found

Species	NSW	QLD	VIC	SA	WA	TAS	NT
Blue-banded bee	✓	✓	✓	✓	✓	✗	✓
Great carpenter bee	✓	✓	✗	✗	✓	✗	✓
Green carpenter bee	✓	✓	✗	✓	✗	✗	✗
Furrow bee	✓	✓	✓	✓	✓	✓	✓
Reed bee	✓	✓	✓	✓	✓	✓	✓
Teddy Bear bee	✓	✓	✓	✓	✗	✓	✓

Practical ways to encourage native bees on farm

1. Placing Stingless Bee Hives

Stingless bee hives can be placed permanently or seasonally within berry blocks. As their flight range is typically around 500 metres, hives need to be positioned so all target crop areas fall within foraging distance. Permanent hives perform best in landscapes with year-round floral resources, such as a mix of crops, bushland, and garden species.

2. Providing Artificial Nesting Sites

Many solitary bees respond well to simple, low-cost nesting structures:

- **Reed bees:** Cut sections of raspberry canes or other pithy stems (200–250 mm long), bundled together or placed in PVC pipes, and mounted around the orchard.
- **Carpenter bees:** Drill holes (3–13 mm diameter, 120–150 mm deep) into untreated timber blocks or provide soft, dead branches for tunnelling.
- **Blue-banded and teddy bear bees:** Create clay or mud bricks using local soil and place them in dry, sunny, sheltered positions. Starter holes help attract nesting

These structures can be installed along headlands, fence lines, or near flowering strips to link nesting with food resources.



Figure 4. Stingless bees' hives on a blueberry farm for pollination in NSW

Photo credit: Melinda Simpson, NSW DPIRD

3. Hedgerows and Flower Strips

Vegetation planted around crop edges and within the wider farm landscape plays a key role in sustaining pollinators outside peak flowering periods. Research shows that pollinator visitation rates can drop sharply more than 500–600 metres from natural vegetation, making the on-farm habitat particularly valuable.

Recommended plant groups include:

- Banksia and Grevillea
- Eucalyptus and Melaleuca
- Leptospermum and Callistemon (bottlebrush)
- Native daisies, sedges, and ground covers

Selecting species suited to local conditions improves establishment success while supporting regional biodiversity.



Figure 5. Raspberry canes used as artificial nesting sites for reed bees

Photo credit: Australian Native Bee Association



Figure 6. PVC down pipe used as a mould to create clay brick nests for blue-banded bees

Photo credit: Aussie Bee

4. In-Field Management Practices

- Maintain grassy or flowering ground cover between rows where practical
- Reduce mowing frequency in unmanaged areas to allow flowering and reseeding
- Retain older trees and vegetation corridors to provide nesting hollows and landscape connectivity

Even small changes in field-edge management can significantly increase insect activity within the crop.



Figure 7. Interrow planting in blueberry orchards to increase natives and other pollinators

Photo credit: Melinda Simpson, NSW DPIRD

Native bees are not a replacement for honey bees; they are a valuable complement that helps create a more stable and reliable pollination system across changing seasons and conditions. By supporting a mix of pollinators on-farm, growers can improve fruit set, increase berry size and uniformity, and reduce reliance on a single pollinator species, while also meeting growing market and community expectations around sustainability and stewardship.

With ongoing uncertainty about honey bee availability, investing in native pollinators offers a practical, low-cost way to protect both productivity and resilience. Through a combination of habitat plantings, simple nesting structures, and thoughtful field management, growers can build diverse pollinator communities that continue to support strong berry performance well into the future.

