

# Boosting On-Farm Biodiversity with Direct Seeding in Berry Systems

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As Australia's berry industry navigates increasing pressure from pollination uncertainty, rising input costs, and long-term soil health challenges, growers are exploring practical, scalable ways to improve both above- and below-ground system performance. On a 100-acre mixed-berry farm in Brooklet, Northern NSW, grower Jascha Saeck has been trialling direct seeding as a means of increasing on-farm biodiversity while rebuilding soil function in ageing blueberry blocks.



**Grower:** Jascha Saeck, Blueberry Fields

**Location:** Brooklet, Northern NSW

**Crops:** Blueberries, raspberries, blackberries

**Farm size:** 100 acres

**Years in operation:** 20

This case study explores the decision-making process, implementation, and early outcomes of introducing pollinator and green manure species into established blueberry inter-rows using a narrow direct drill seeder, a system designed to work within the constraints of permanent berry plantings.

## The Challenge

Like many berry growers, Jascha has traditionally relied on managed honeybees to support crop pollination. Since the arrival of Varroa mite in Australia, access to hives has become more difficult and costly, raising concerns about the long-term reliability of this approach.

At the same time, the farm's inter-rows were largely grass-dominated, offering limited floral resources or habitat for native pollinators and beneficial insects such as predators and parasitoids. As a result, the system was not fully leveraging the natural processes that drive pollination, suppress pests, and build biodiversity.

Adding to this complexity, several blueberry blocks were approaching the end of their productive life. Jascha wanted to build soil fertility and structure before replanting, but needed a low-disturbance approach that wouldn't interfere with his existing blueberry rows.

## Exploring the Options

Jascha assessed several methods for introducing greater plant diversity into the inter-rows, weighing up cost, practicality, and performance in a permanent cropping system.

- Broadcast seeding was attractive from a cost perspective, but uneven seed placement, high competition from existing grass, and poor seed-to-soil contact limited its potential for reliable establishment
- Contract seeding services offered professional equipment and reduced labour demands, but availability, cost per pass, and machinery width made this option impractical in mature blueberry rows
- Drone seeding showed promise for rapid coverage and minimal soil compaction, particularly in wet or difficult terrain. However, limited penetration into dense grass and reduced precision in seed placement meant it was unlikely to deliver consistent results without significant ground preparation

After evaluating these approaches, Jascha identified a narrow direct drill seeder as the most suitable option, combining precise seed placement, minimal soil disturbance, and compatibility with existing row spacing.

## Practice Implemented

Jascha's criteria were clear: the system needed to support both pollination and soil improvement, fit within narrow inter-rows, operate with minimal tillage, and be repeatable across multiple seasons without reliance on external contractors.

A Cosmo Bully® seven-disc direct drill seeder was selected due to its compact design and ability to operate in relatively compacted soils. With a 1.4 m seeding width and an overall width of 1.9 m, the unit was narrow enough to pass between established blueberry rows while targeting the flat section of the inter-row.

### Key features included:

- A front cutting disc to slice through surface residue
- A seed placement disc for accurate delivery
- A ground compaction wheel to improve seed-to-soil contact
- Dual seed trays with adjustable seeding rates

Heavier springs were added to improve disc penetration in firmer soils.



**The Cosmo Bully® seven-disc direct drill seeder, with heavier springs fitted to improve ground penetration of the discs in firmer soils**

Jascha selected 2 seed mixes to test with the direct seeder:

1. **Pollinator/insectary mix:** buckwheat, crimson clover, mustard, tillage radish, chia and field peas. This mix is designed to attract native pollinators, predators, and parasitoids
2. **Green manure winter blend mix:** Tetila ryegrass, rye corn, vetch, lupins, chia, oats, cow pea, tillage radish, clover, leafy turnip, and brassica. This mix is designed to build organic matter and cycle nutrients

Seeding was carried out in inter-rows, headlands, and on mounds earmarked for future replanting. Jascha experimented with timing relative to mowing and trialled light scarification (a very low mow) to improve seed-to-soil contact and reduce grass competition.

## Results and Observations

Pollinator-friendly species such as buckwheat, clovers, and field peas established quickly in prepared areas, producing abundant flowering. While no formal monitoring was conducted, Jascha observed increased activity from native bees, hoverflies, and other beneficial insects in seeded zones.

These observations suggest that even relatively small increases in floral diversity can enhance on-farm biodiversity and potentially improve pollination resilience. However, further monitoring would be needed to quantify the impact on crop yield and pollination services.

The green manure mix produced noticeable biomass, particularly from vetch, lupins, rye, and tillage radish. After these crops die off or are mowed, the plant residues are expected to contribute organic matter and improve soil structure, water movement and nutrient cycling ahead of replanting.

Deep-rooted species such as tillage radish appeared to improve soil friability in some mounds, creating channels that may assist future root development. While these observations were informal, they point to early improvements in soil structure and workability.

## Establishment Challenges

Performance varied significantly across the farm. Where grass competition was reduced through timely mowing or light scarification, establishment was strong, and vegetation shifted from unproductive grass to a more diverse, functional ground cover.

In contrast, compacted wheel tracks and high-traffic areas consistently underperformed. In these zones, the seeder struggled to achieve adequate penetration, and competition from grass limited germination. Jascha noted that future work may need to explore targeted decompaction, alternative equipment settings, or species better adapted to compacted soils.

## Grower Reflections

Jascha views direct seeding as a promising tool for building long-term system resilience in permanent berry plantings, particularly when surface preparation and timing are carefully managed.

One of the key lessons was that grass competition is the single biggest barrier to success. Light ground preparation — such as a low mow or shallow scarification — made a substantial difference in establishment, even within a minimum-tillage system.

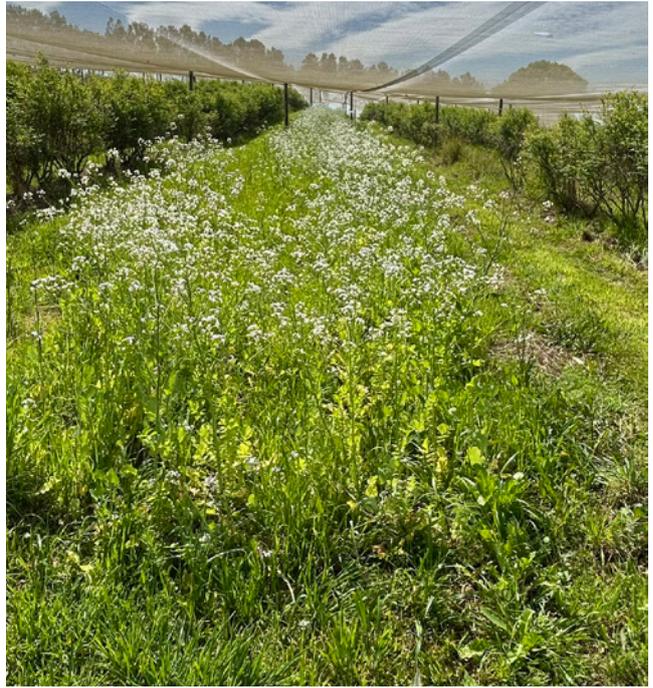
Equipment choice also proved critical. While the narrow direct drill seeder was the only practical option for mature inter-rows, fine-tuning seed rates, spring tension, and timing was essential for achieving consistent results.

On the pollination side, Jascha was encouraged by the visible increase in flowering diversity and beneficial insect activity, noting that the real benefits are likely to accumulate over multiple seasons rather than appearing in a single year.

His advice to other growers is to start small, trial a range of species, and focus first on areas with the greatest likelihood of successful establishment before scaling up across the farm.



**The key is finding the sweet spot between mowing the existing inter-rows and sowing the pollination or green manure seed mix. If the grass is too competitive, germination drops significantly. Even light preparation, like a low mow or scarification, can make a big difference.**



**Once germination occurred many species established quickly in prepared areas, producing abundant flowering**



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