Research update

July 2026

This R&D update showcases the research initiatives funded by Summerfruit NZ. During the 2025-26 season, Summerfruit NZ invested in several projects with the Bioeconomy Science Institute, Plant & Food Research Group (BSI|PFR) and the A Lighter Touch programme to advance new biological control solutions targeting *Monilinia*, *Botrytis*, and *Pseudomonas syringae* pv. *syringae*. Building on earlier laboratory evaluations, this season's trials have delivered valuable field-based insights into product efficacy.

This update also highlights the successful completion of the ALT supported understorey planting project concluding with the release of grower case studies that capture key learnings and practical grower experiences from the 3-year project. In addition, a second year of artificial pollination trials has refined understanding of pollen harvesting efficiency, potential yield impacts due to flower harvesting and the benefits of supplemental pollination. Promising results from the UV-C trials in Central Otago demonstrate the potential for this technology to control key orchard diseases, with key findings summarised in this update.

Evaluating selected biofungicides for control of *Monilinia fructicola* in potted peach trees

This study evaluated whether selected biofungicides could control *Monilinia fructicola* (brown rot/blossom blight) in peaches as an alternative to synthetic fungicides and builds on the initial laboratory screening carried out during the 2024-25 season. Trials were conducted on potted 'Gordon's Glory' trees under field conditions, using five biofungicides (BOTRY-Zen®, Epilog®, Sentinel®, Serenade Optimum® and Esteem®), with a synthetic fungicide (Folicur®) as a control. All treatments were applied four times and followed by artificial inoculation of the pathogen. Artificial inoculation of *M. fructicola* guaranteed high disease pressure in the experiment. Disease levels, including blossom blight, shoot die-back and cankers, were assessed at both shoot and whole-tree levels under conditions highly favourable for infection (Figure 1).

Figure 1. Example of typical shoot die-back, canker formation, wilted leaf cluster and blighted flower (L). Close up image of typical canker, wilted leaf cluster, blighted flower and poor fruit set caused by *M. fructicola* on 'Gordon's Glory' peach after artificial inoculation with conidia of *M. fructicola* (R) (Image credit BSI, from Parry *et al*. 2026).

Results showed that the synthetic fungicide Folicur® (control treatment) significantly reduced disease, while all of the biofungicides failed to achieve a statistically significant reduction in disease levels compared with the untreated control under the high disease pressure conditions in this trial (Figure 2). However, an assessment of relative performance indicated BOTRY-Zen® and Esteem® were the most promising, followed by Epilog®, Serenade Optimum®, and Sentinel®. High disease pressure (due to conducive weather and heavy inoculation) may have limited biofungicide effectiveness. The study noted that although biofungicides were less effective than conventional fungicides, biofungicides warranted further testing in orchard field trials, as their performance could improve under commercial conditions.

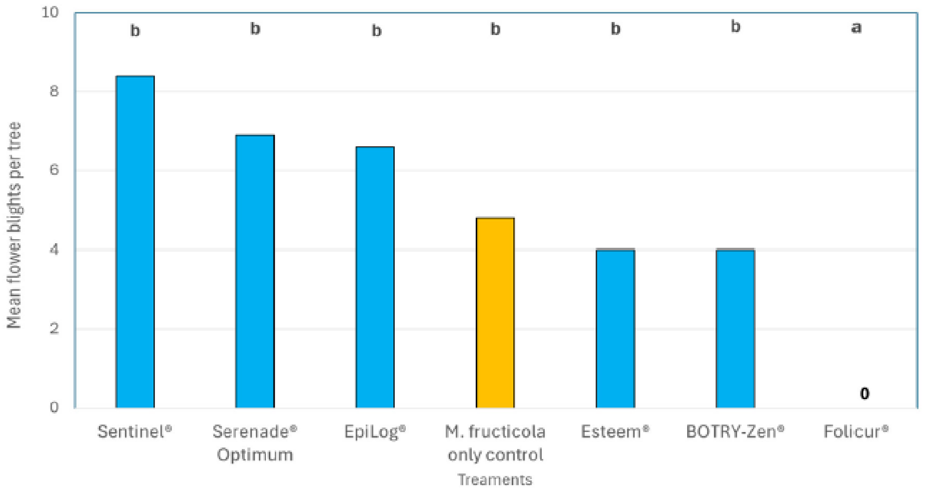


Figure 2. Number of blighted blossoms per tree on 'Gordon's Glory' potted peach trees caused by M. fructicola after four spray applications of the treatments and four applications of *M. fructicola* inoculum. Treatment means with the same letter are not significantly different ($p>0.05$). (From Parry et al. 2026).

Report

Parry F, Ah Chee A, Marshall S, Fehlmann C, Hedderley D, Wood P, Elmer PAG. January 2026. Testing select biofungicides against *Monilinia fructicola* on potted peach trees. A Bioeconomy Science Institute report prepared for: Summerfruit New Zealand. Milestone No. 106674. Contract No. 25-35522. Job code: P/381023/01. SPTS No. 28241.

Field testing of biofungicides for brown rot control in 'Golden Queen' peaches

This field trial tested four registered biofungicides (BOTRY-Zen®, Esteem®, Sentinel® and Serenade® Optimum) for controlling brown rot in 'Golden Queen' peaches in Hawke's Bay. The field trial was part of a 3-year Summerfruit NZ programme to screen and identify biofungicides that have efficacy against *M. fructicola*. This field trial builds from the potted peach trial reported in the previous section of this R&D update.

The standard fungicide programme remained highly effective, achieving around 93–99% control, while all biofungicides provided some reduction in disease at harvest. Among these, Esteem® delivered the strongest field performance, achieving approximately 75% control of brown rot at harvest, making it the most effective biological treatment tested, and maintained moderate control postharvest. Sentinel® showed moderate control at harvest (58% at harvest) but performed poorly after storage. BOTRY-Zen® provided lower but more consistent control (with potential residue concerns), and Serenade® Optimum was the least effective overall. These results confirm that while biofungicides can contribute to disease management, they currently do not match the performance of conventional fungicides.

The report recommends further work to improve the effectiveness of biofungicide-based programmes.

It is recommended that future work should focus on optimising the use of Esteem® and combining it with other biofungicides (e.g., Aureo® Gold) to achieve more commercially viable control of brown rot. Aureo® Gold, has shown promising efficacy in internal BSI trials.

The next step being considered is a 2026/27 late-season field trial focused on optimising Esteem® use, including testing different rates and integrating it into a late-season spray programme that meets resistance management guidelines. Future field trials should evaluate these products alone, in mixtures, and in alternating programmes to improve overall control and reduce reliance on synthetic fungicides.

Report

Wood PN, Parry F, Elmer PAG, Hedderley D. May 2026. Field testing of biofungicides for brown rot control in 'Golden Queen' peaches. A Bioeconomy Science Institute report prepared for: Horticulture New Zealand Incorporated. Milestone No. 107134. Contract No. 25-35689. Job code: P/383020/01. SPTS No. 2860128601.

Figure 3. Example of Hawke's Bay 'Golden Queen' peaches unsprayed in late season (untreated control) that were harvested on 3 March 2026 and given 6 days of postharvest incubation under high humidity at ambient (~20°C). (Image credit BSI, from Wood et al. 2026).

Update on canker research

Canker research initiatives led by BSI and supported by Summerfruit NZ have focused on evaluating treatments to reduce fungal and bacterial cankers through three interconnected projects. The first is to evaluate pruning wound protectants on potted cherry plants. This work supports a larger field trial where the effectiveness of a best practice management programme (designed by BSI) is being compared with current industry standard practices for canker management. Summerfruit NZ has also been supporting an MSc student, at Lincoln University, to look at fungal cankers in summerfruit.

Efficacy of pruning wound protectants against *Pss*, *Calosphaeria pulchella* and *Cytospora* spp.

Potted cherry trees located at BSI in Lincoln have been used to test wound protectant treatments for efficacy against *Cytospora* and *Calosphaeria* canker, and *Pss* in a series of independent wound-protectant experiments. Treatments being evaluated include conventional fungicides, biological products and physical wound sealants. Each of these experiments were set up from December 2025 to March 2026 (Figures 4 & 5). The experiments are currently in the incubation period, and final assessments are scheduled from October to December 2026 and will include measurement of the necrosis/vascular discolouration length and pathogen re-isolation.

Figure 4. Three-year-old potted 'Lapins' cherry trees used for the evaluation of wound protectants against *Calosphaeria pulchella* and a mixed *Cytospora* spore inoculum (Image credit BSI, from Marroni *et al*. 2026).

Report

Marroni V, Colhoun K, Nguyen H, Addison S, Visnovsky S, Joshi M, Elmer PAG. May 2026. Canker control and management in cherry – Interim report May 2026. A Bioeconomy Science Institute report prepared for: Summerfruit New Zealand. Milestone No. 106679, 106682. Contract No. 25-35590. Job code: P/371020/01. SPTS No. 28609.

Figure 5. Wound inoculation procedure on 'Lapins' potted cherry trees under shadehouse conditions at BSI, Lincoln. (A) Fresh pruning cut on the central leader (3-year-old wood) used as the treatment and pathogen inoculation site. (B) Treated, then pathogen inoculated, pruning wound enclosed in a clear plastic bag to maintain high humidity following application of the pathogen spore suspension(s). (C) Annual shoots treated, then inoculated and bagged after pathogen inoculation. (Image credit BSI, from Marroni *et al*. 2026).

Best practice field trials underway in Central Otago to reduce cankers and tree mortality

The aim of this project is to evaluate the effectiveness of a best practice management programme (designed by BSI) against current industry standard practices for canker management with the aim of comparing the effectiveness of these different approaches.

Two commercial orchards in Central Otago (Alexandra and Bendigo) were selected for this project. Cultural practices and sanitation activities have been implemented in the 'best practice' plots for comparison against standard grower practices.

This project has been designed as a multi-year study and will continue through the 26/27 season. This allows the science team to follow-up and capture year-to-year variability, and assess the longer-term impact of these practices on disease incidence and tree survival. This will ensure that observed improvements due to management practices are sustained over time and will enable the adoption of the most effective practices into a commercial orchard setting.

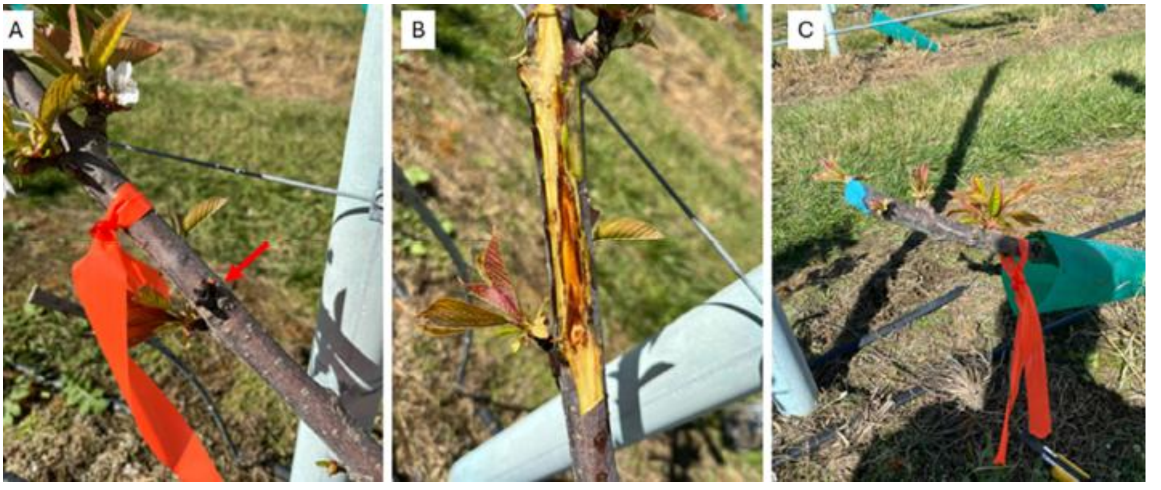


Figure 6. Example of sanitation activities carried out within the best-practice trial in October 2025. A dead bud (red arrow) observed on the cordon of a 'Sandra Rose' cherry plant (A). Removal of bark exposed extensive necrotic tissue beneath the external symptom, extending longitudinally along the wood (B). Due to the extent of the lesion, the cordon was cut approximately 15 cm below the visible necrotic margin, and the pruning wound was subsequently painted with a mixture of Vistaseal™, Topsin™, and Validus® (C). (Image credit BSI, from Marroni *et al*. 2026).

Evaluating UV-C light treatment for the control of key cherry pathogens and impact on yield and fruit quality

Last season's UV-C trials carried out by BSI showed promise to control *Pseudomonas syringae* pv. *syringae* (Pss), *Botrytis cinerea*, and *Monilinia fructicola* in a commercial cherry orchard grown under the Upright Fruiting Offshoot (UFO) training system by directly exposing petri-plates with a known concentration of pathogens of the three cherry diseases. In this second year, the same technology has been used, but this time under natural disease conditions.

The trial was conducted in a commercial cherry orchard in Central Otago (Figure 7), the study applied repeated UV-C treatments and compared treated trees with untreated controls. Overall, UV-C showed no harmful effects on pollen viability or plant health, indicating it can be safely used during flowering. It also reduced bacterial leaf spot severity and significantly lowered the incidence of some postharvest fungal rots, particularly *Alternaria* and *Penicillium* in export fruit.

Deploying the UV-C unit. (Photo credit: Rusty Davidson, 45 South).

In addition to disease outcomes, one of the most notable findings was a substantial increase in productivity: the UV-C treatment increased fruit yield by 82% and fruit number by 76%, without negatively affecting fruit size, firmness, or sugar content. However, results for some diseases were variable, and the season had relatively low disease pressure, meaning further testing is needed under different seasonal conditions. Overall, the study demonstrates strong potential for UV-C as a sustainable addition to cherry disease management, but recommends further research to optimise application timing, reduce costs, confirm yield effects, and integrate the technology into existing orchard systems.

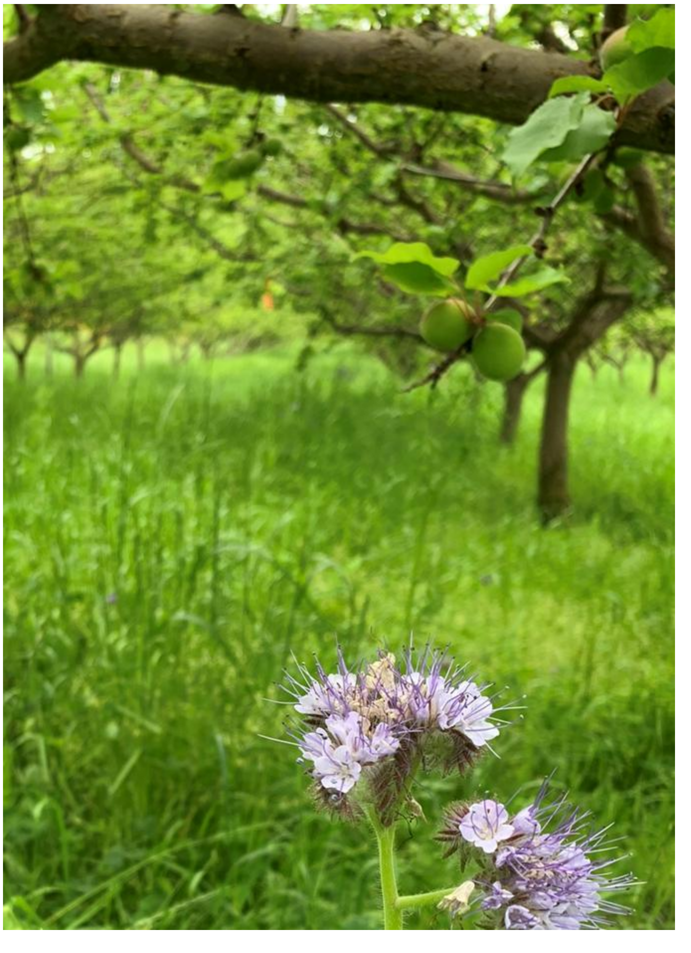
Figure 7. UV-C trial area, the black plastic was used to cover the UV-C treated trees to protect from spray applications. Photo credit: Kate Colhoun, BSI.

Report

Colhoun K, Marroni V, Parry F, Broussard M, Attfield B, Visnovsky S, Hedderley D, Elmer PAG, Hirsch K. May 2026. Evaluation of UV-C light treatment for the control of key cherry pathogens and impact on yield and fruit quality. A Bioeconomy Science Institute report prepared for: Horticulture New Zealand Incorporated. Milestone Nos. 107325, 107322. Contract No. 25-35732. Job code: P/371022/01. SPTS No. 28591.

Understorey plantings show enhanced biodiversity

The Summerfruit NZ / A Lighter Touch project concluded in March this year with the launch of grower case studies. This project has trialled understorey plantings in Central Otago orchards to improve biodiversity, pest control, weed management, and soil health. Across five orchards, tailored seed mixes were established using different sowing methods, with monitoring of the understorey plantings and insect biodiversity over two growing seasons.

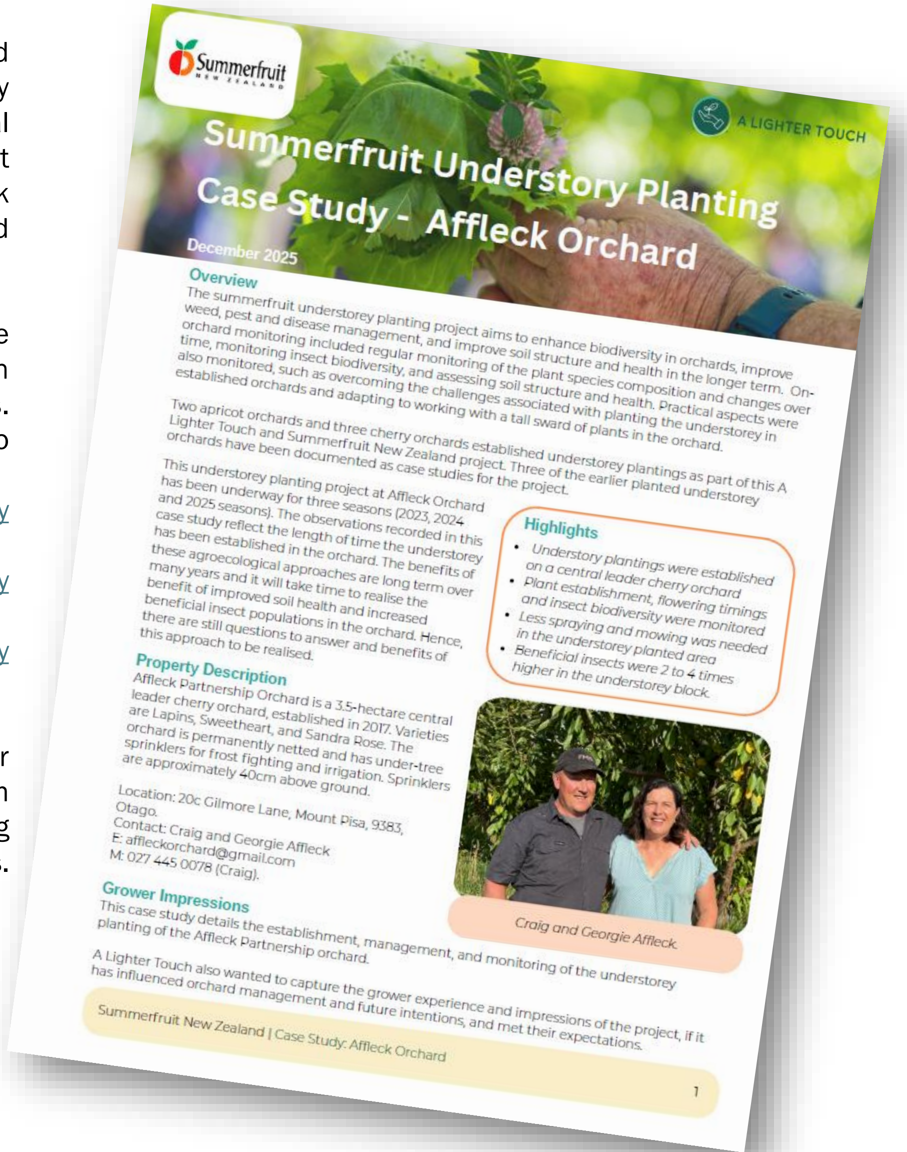


The results showed that understorey plantings are feasible and can deliver clear benefits, including higher abundance of beneficial insects (often 2–4 times greater in the understorey areas), reduced herbicide use and mowing, improved ground cover, and some early indicators of improved soil condition. However, outcomes were mixed in some areas, particularly pest levels (e.g. aphids and thrips showed little difference), and understorey plant diversity declined over time as perennial species began to dominate. Successful establishment of the understorey required careful timing (spring or autumn), access to suitable equipment, and strong grower engagement, which proved critical to success.

Overall, the project demonstrated strong potential for understorey planting as a practical agroecological approach in summerfruit orchards but highlighted the need for further work on maintaining species diversity and understanding pest risks at harvest.

The grower learnings from the understorey project have been captured in a series of case studies. These case studies are available to download from the ALT website:
[Case study: Summerfruit Understorey Planting – Affleck Orchard]
[Case study: Summerfruit Understorey Planting – Fairview Orchard]
[Case study: Summerfruit Understorey Planting – Electric Cherries]

The ALT website also hosts a number of useful resources developed from the understorey project, including plant species and soil testing guides. (https://a-lighter-touch.co.nz/our-projects/botrytis-2/)


Summerfruit NEW ZEALAND

A LIGHTER TOUCH

Summerfruit Understory Planting Case Study - Affleck Orchard

December 2025

Overview

The summerfruit understorey planting project aims to enhance biodiversity in orchards, improve weed, pest and disease management, and improve soil structure and health in the longer term. On-orchard monitoring included regular monitoring of the plant species composition and changes over time, monitoring insect biodiversity, and assessing soil structure and health. Practical aspects were also monitored, such as overcoming the challenges associated with planting the understorey in established orchards and adapting to working with a tall sward of plants in the orchard.

Two apricot orchards and three cherry orchards established understorey plantings as part of this A Lighter Touch and Summerfruit New Zealand project. Three of the earlier planted understorey orchards have been documented as case studies for the project.

This understorey planting project at Affleck Orchard has been underway for three seasons (2023, 2024 and 2025 seasons). The observations recorded in this case study reflect the length of time the understorey has been established in the orchard. The benefits of these agroecological approaches are long term over many years and it will take time to realise the benefit of improved soil health and increased beneficial insect populations in the orchard. Hence, there are still questions to answer and benefits of this approach to be realised.

Highlights
- Understory plantings were established on a central leader cherry orchard
- Plant establishment, flowering timings and insect biodiversity were monitored
- Less spraying and mowing was needed in the understorey planted area
- Beneficial insects were 2 to 4 times higher in the understorey block

Property Description

Affleck Partnership Orchard is a 3.5-hectare central leader cherry orchard, established in 2017. Varieties are Lapins, Sweetheart, and Sandra Rose. The orchard is permanently netted and has under-tree sprinklers for frost fighting and irrigation. Sprinklers are approximately 40cm above ground.

Location: 20c Gilmore Lane, Mount Pisa, 9383, Otago.
Contact: Craig and Georgie Affleck
E: affleckorchard@gmail.com
M: 027 445 0078 (Craig).

Craig and Georgie Affleck

Grower Impressions

This case study details the establishment, management, and monitoring of the understorey planting of the Affleck Partnership orchard.

A Lighter Touch also wanted to capture the grower experience and impressions of the project, if it has influenced orchard management and future intentions, and met their expectations.

Summerfruit New Zealand | Case Study: Affleck Orchard 1

Improved irrigation decision-making information for stonefruit growers

Over the 2025/26 season Primary Insight evaluated evapotranspiration forecasts and soil moisture data used for irrigation decision-making. Six different cherry canopies in Central Otago were assessed – three upright fruiting offshoot (UFO) canopies at 2, 2.5 and 3 metre row spacings; a pergola canopy at 3 metre row spacings; two central leader (CL) canopies at 5 metre row spacings. One of the CL canopies had mature trees that were >20-years old, the other trees that were approximately 7-years old that had been pruned to an upright fruiting bush system (UFB).

The calculated crop coefficient (kc) values show for an actively managed CL canopy alongside intensively planted UFO and pergola canopies a peak season kc of between 1.0 and 1.05 should be used. For less intensive plantings such as 5m UFB (or other similar canopies such as Kim Green Bush or Spanish Bush), or 3m UFO, a peak season kc of between 0.9 and 0.95 should be used. For traditionally managed CL canopies a peak season kc of between 1.1 and 1.2 should be used.

To ground truth the calculated kc values, the 2.5m UFO kc data was retrospectively entered into the SWAN Systems water balance model. This resulted in a strong correlation between the calculated water balance, and a 90cm Sentek soil moisture probe installed at the site.

Report Primary Insight (2026) Sweet cherry crop coefficient. Final report. Prepared for Summerfruit NZ. April 2026. 15p.

Cherry artificial pollination trial

This collaboration between Summerfruit NZ, BSI|PFR, and Cherrybank Orchard built on the artificial pollination trials completed during the 2024/25 season. This project looked at harvesting efficiency, potential loss in yield due to flower harvesting, and the benefits of supplemental pollination.

Two pollen harvesting methods were investigated:
(1) direct anther harvesting using a fine-toothed comb, and
(2) hand collecting and then milling flowers

Both flower milling and direct anther combing can produce viable pollen efficiently, with improved outcomes as operator experience increases. Importantly, harvesting pollen generally did not reduce fruit set, although large-scale flower removal may affect yield in some cases.

Supplemental pollen can significantly increase fruit set and yield when natural pollination is limited, particularly for self-incompatible cultivars like 'Regina', but provides little advantage in seasons with already strong natural pollination. Overall, artificial pollination can be a cost-effective management tool in New Zealand, especially in unfavourable pollination years, but its economic value varies annually.

Report

Broussard MA, Lee S, Lyall K, Fearn D, Marfell R, Ball M, McLean B (2026). Artificial pollination in cherry. A Bioeconomy Science Institute report prepared for: Summerfruit New Zealand. SPTS No. 28409. 10p.

Research reports and resources

All reports for the projects presented in this update are available on request. Email research@summerfruitnz.co.nz.

Lunch & Learn webinars

Every Thursday until the end of August, Summerfruit NZ is hosting webinars to share the latest in practical research and trials. Go to the Summerfruit NZ website to find out more. Click HERE.