

Kiwifruit | Technical Sheet

Biostart Armillaria Programme



Background

Armillaria is a naturally-occurring soil fungus that infects the roots of plants. In kiwifruit vines, Armillaria infection is a slow progressing disease that initially restricts production of the vine and eventually results in vine death. There are three different Armillaria species found in New Zealand with *Armillaria novae-zelandiae* being the most important for kiwifruit. Armillaria infections spread from infected roots of other vines, dead tree stumps, or willow/pine hedges. New kiwifruit vines cannot be planted in same spot as the infected vine.

In healthy soils, disease-causing fungi and bacteria are suppressed by other soil microbes. A balanced soil biology enables kiwifruit to withstand disease pressure from Armillaria while an unbalance soil biology can allow the disease-causing microbes to proliferate.

Biostart Armillaria Control Programme

Terracin is used to reduce the Armillaria, followed by Mycorrcin, which rejuvenates any beneficial microbes that have also been reduced by Terracin. This results in a rebalanced soil microbial population that is resilient against Armillaria going forward.

Terracin contains *Bacillus amyloliquefaciens* Bs1b which works by disrupting the existing microbial population in the soil by producing antimicrobial compounds that suppress Amillaria (and some other soil microbes). The application of Terracin allows the soil biology to be reset.

Mycorrcin is a soil biostimulant that activates naturally occurring beneficial microbes present in your soil, including *mycorrhizal fungi*, which improves plant health, resilience and root development. Mycorrcin is used to stimulate the growth of beneficial microbes in the soil and restore the balance in soil biology that is found in healthy soil after Terracin has done its reset.

Directions for use

Terracin

- Can be applied to the whole orchard floor or to individual infected plants
- If treating individual plants treat all adjacent vines to contain spread of the fungi.
- Apply Terracin in early August to dormant vines.
- Other Terracin uses include apple replant and grape root diseases

Mycorrcin

- Mycorrcin should be applied to reactivate beneficial soil microbiology twice after Terracin treatment:
 - September: 3–4 weeks after the Terracin application
 - Late November/early December
- Mycorrcin can be tank mixed with herbicides fungicides, fertigation nutrients and suspension fertiliser.

Application rate

Orchard floor:

Early August apply 20 L/ha Terracin, water rate 2,000 L (1:100 dilution) to the orchard floor. Ensure the lower trunk gets covered with the spray. Repeat programme annually.

Spot spray treatment for infected vines:

Late winter/early Spring apply to the root zone of the infected vine 20 L of a 1:100 diluted solution of Terracin (1 L Terracin/100 L water). Treat all adjacent vines at the same rate. Ensure the lower trunk gets covered with the spray. Repeat programme annually.

Required follow up programme

Orchard floor:

Early September, 3–4 weeks after Terracin application, apply 10 L/ha Mycorrcin in 1,000 L water. In late November/early December apply 10 L/ha Mycorrcin in 1,000 L water. Repeat programme annually.