

Research area: PESTS AND DISEASES

Regional cluster: WESTERN AUSTRALIA

Which low growing endemic Western Australian plants (suitable for mid-row and under vine planting) suppress, or are neutral to, the soil-dwelling larvae of the South African garden weevil (*Phlyctinus callosus*)?

Background

Garden weevil larvae feed on the roots of grapevines and have a very wide range of exotic plant species on which they feed, survive and thrive. Many of these plants are commonly found in vine mid-rows, and provide an ongoing pest reservoir, causing economic damage to vine canopies, once larvae mature and emerge above ground as adult weevils. Monitoring of the under-vine soil strip in Western Australian vineyards has shown significant numbers of weevil larvae on the roots of vines.

Why is it important?

There are currently only a few suitable exotic grass species known to be both weevil neutral and suitable as mid-row plants. This limitation of available species presents a significant reduction in vineyard plant biodiversity when attempting to achieve weevil suppression by mid-row hybrid grass monocultures. This lack of plant biodiversity, in turn leads to poor nectar resource provision for predatory and parasitoid insects that naturally suppress other vineyard pests such as mealybugs, scale insects, light brown apple moth and vine moth.

Hybrid pasture grasses are continuously improved to increase protein content, and these improvements may be rendering them palatable to weevil larvae. Reliance on hybrid grass mid-row plantings is therefore limited, and exploration of other suitable mid-row plant species has a great potential to deliver biodiversity, and pest suppression benefits, including that of garden weevil.

Research on low-growing native plants for weevil suppression has not only potentially powerful benefits for under-vine weed management but also for strategic Australian preparedness for glyphosate use restrictions. The under-vine strip is conventionally managed by using this herbicide. However, growing health concerns continue to emerge, and glyphosate is now classified as a likely carcinogen by the WHO, and has been banned in France and Denmark since late 2017. Restrictions on use (with full ban pending within several years) also apply in the EU since late 2017. Alternative under-vine management via suitable low-growing native plants can thus reduce glyphosate residues in export wine, as well as providing domestic health benefits.

This project will attempt to identify and trial, under laboratory conditions, a number of low-growing indigenous plants for their ability to suppress growth of weevil larvae. Under-vine plantings of species identified by this research has the potential to assist in control of weevil outbreaks in vineyards of Western Australia.

What would success look like?

Initial identification of suitable plants for weevil suppression and weevil neutral status would allow growers in Western Australia to trial these selected plants in their vineyards. Results will provide confidence that such plants will not aid weevil outbreaks, they will assist growers in their land care efforts, increase plant biodiversity in vineyards and complement other weevil control efforts.

Endemic Western Australian plants are well known for extraordinary floristic value, providing not only biodiversity, but also highly attractive signature plants that could become a marketing signature for wine produced from biodiverse vineyards in Western Australia. This project will complement and add value to other ecological weevil initiatives currently underway in Western Australia.