Native insectary plants support populations of predatory arthropods for Australian vineyards

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Introduction

• Predatory arthropods contribute to the biocontrol of grapevine, Vitis vinifera, pests each season.
• Three native plants were evaluated to determine their capacity to provide insectary benefits to predatory arthropods in Australian vineyards, and thereby to enhance biological control of insect pests.
• Native plants are preferred as supplementary flora, as they are locally-adapted to Australia’s climatic conditions.

Aims

To determine if selected candidate insectary plants:
• Have the capacity to support populations of natural enemies throughout the year,
• Could provide habitat for economically damaging vineyard pests.

Methodology

• Stands of mature Christmas bush, Bursaria spinosa, prickly tea-tree, Leptospermum continentale, and wallaby grasses Rytidosperma ssp., located adjacent to or in vineyards in the Adelaide Hills and Barossa were sampled for arthropods in 2013/14.
• Grapevines were also sampled to explore relationships between each plant and associated arthropods using diversity indices.
• A total of 27,091 individual invertebrate specimens were collected, comprising 20 orders and 287 morphospecies. They were categorised into different functional groups including predators, herbivores and other.

Results

• The richness of predator morphospecies across all plant types (S = 98) was nearly double the number found in association with grapevines. Predators dominated the diversity of morphospecies present on each plant by an average of 2:1 (predator : herbivore).
• It may be possible to increase the functional diversity of predators by more than 3x when B. spinosa or L. continentale is planted versus grapevines only, and increase the net number of predator morphospecies by around 27% when wallaby grasses are planted in combination with the woody perennial plants.

Conclusion

Bursaria spinosa, Leptospermum continentale and Rytidosperma ssp. provide a suitable habitat to support diverse and functional populations of predatory arthropods. These native insectary plants were not found to be breeding sites for vineyard herbivores and are not considered a threat when planting them in and around mature vineyards. Vineyard managers are encouraged to explore the use of these and other native insectary plants in association with vineyards.

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