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Varroa Mite Management

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Pollination and Pollinator Friendly Plantings

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Pollination by managed honeybees can be supplemented by wild pollinators. It is possible that integrated management of honeybees and a diversity of alternate pollinators can enhance crop performance. Growers can attract wild pollinators through landscape management and preserving native flora, through pesticide management or by planting alternative forage in unused or unproductive areas of the paddock or orchard. Planting a cover crop is an option for growers to attract wild pollinators into the targeted crops and provide alternative forage sources for all pollinators.

Companion planting to aid in pollination is typically done through “non-cash” crops grown on unproductive or unused land to provide a flowering window typically before the target crop is due to flower. Often, they are short term plantings and are traditionally mown or cut and left to breakdown, however, to assist in pollination mowing needs to occur post flowering to deliver maximum benefit to your pollinators. Companion plantings can either contain single or multi species or can be the cultivation (or non-control) of weed species that already exist within the crop area.

Some additional benefits on top of pollination benefits can include:

- Nitrogen fixation, if legumes are used
- Reduction of soil compaction
- Prevention/reduction in erosion
- Prevention/reduction of soil pathogens (biofumigants)
- Attraction of other beneficial insects, however pest species can also be attracted
- Increased soil carbon and organic matter
- Increased soil water holding capacity
- Managing soil salinity and sodicity

Before committing to companion planting, it is important to consider what outcomes you are trying to achieve as it will dictate the species used and when you plant.

Some examples of outcomes may include:

- Providing pollinator forage prior to main crop flowering. This will encourage and build up alternative pollinators in the area. It will also provide some forage for managed colonies as they are brought into orchard.
- Provide alternative forage for pollinators during the main flowering period. In crops that have poor honey bee nutrition, providing alternative forage can maintain healthier bees and better pollination outcomes.
- Late flowering alternative forage to provide floral resources at the end of the main crop flowering to enable the staged removal of managed colonies with robbing. Keep in mind the promotion of weed species without proper management may lead to increased weed burden on your property.



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If you are growing tree crops then companion planting can be planted between the rows, whereas broad acre crops may require plantings around the periphery of the crop rather than interspersed through the crop. Companion planting can be broken down into five major groups, these can be used singularly or in a combination.

Legumes: Provide additional nitrogen will decompose quite quickly as they contain a lower carbon-to-nitrogen ratio, low growing types like clover may be more tolerant to frosts. Very popular in providing supplementary flowers for alternative pollinator attraction.

Brassicas: Quick growing, can act as biofumigants, can help to reduce soil compaction, if left too long before being cut/mown can contribute to weed seed bank. Very popular in providing supplementary flowers for alternative pollinator attraction.

Annuals: Generally planted specifically for flowering capabilities to attract alternate pollinators, do have mild impacts on weed suppression and soil conditioning.

Perennials: Can reduce the cost of reseeding annually, can be planted around the periphery of crops and can include stands of trees and shrubs.

Grasses: Not generally used to attract pollinators. However, it will increase biomass above and below ground, germinates quickly so can provide a natural weed suppression, may decompose slowly when cut/mown due to the higher carbon-to-nitrogen ratios.

When planting companion plants, the most critical factor to success is timing. Planting too early or too late will mean missing the targeted flowering window. Understanding how long your cover crop takes to germinate and mature is important to ensure it coincides with the flowering window being targeted.

There are also other factors to consider such as rainfall. In low rainfall areas seeds may not germinate as quickly, potentially missing the pollination window. Planting a mix of companion plants to spread flowering time can help mitigate this risk. Not all plants will flower in time to supplement your target crop; however, these plants may still provide nutritional benefits to the wild pollinators and managed bees that remain until they are collected post-pollination.

Some companion plant species, including white clovers and brassicas, are exceptional at attracting alternate pollinators. However, there is evidence that these same species can be detrimental to pollination by taking managed honey bees away from your target species. For example, there is evidence that honey bees will fly up to 5 kilometres to feed on white clover (Goodwin, 2012). As the aim of companion planting is to increase the success of pollination, thought needs to be given to what species your companion plantings contain and the proximity to your target crop. Be mindful of how “tasty” the companion flowers are so as not to distract the pollinators from your targeted crop.



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Companion planting, especially native permanent shrub and tree stands, can provide shelter for alternate pollinators. Similarly, undisturbed patches of bare soil, sand or clay banks and living and dead plant material serve as nesting sites. [Bee Friendly](#) is a guide for what to plant to encourage both honey bees and Australian native pollinators.

Further resources

Powerful Pollinators Planting Guides: <https://www.wheenbeefoundation.org.au/our-work/projects/powerful-pollinators/>

AgriFutures Clover4Bees pilot study: <https://agrifutures.com.au/wp-content/uploads/2024/10/24-201-clover4bees.pdf>

Pollination of Crops in Australia and New Zealand: <https://agrifutures.com.au/product/pollination-of-crops-in-australia-and-new-zealand/>

Encouraging wild pollinators to your orchard: https://www.westernsydney.edu.au/_data/assets/pdf_file/0010/1686592/Flowering_plants_fact_sheet_final.pdf