

# Modelling to optimise honey production

**A new computer model developed by CRC for Honey Bee Products researchers helps apiarists match resources supplied by the flora at an apiary site with honey bee colony demand.**

Honey bee numbers at apiary sites rise and fall as the seasons change. In winter, when conditions are cooler and wetter, there is less opportunity for foraging and raising new bees, and colonies may have only 10,000 bees. Alternatively, when conditions are favourable in late spring, a colony can grow to 60,000 bees.

**It is important to provide more plants that flower and produce nectar and pollen when conditions are favourable.**

Although matching the resource supply with demand seems intuitive, matching is vital to honey production. Using computer simulations, CRC researchers found that apiaries that match resource supply with a colony's capacity for collection produce considerably more honey. Additionally, the colonies are likely to be healthier.



**CRC HBP**  
FOR HONEY BEE PRODUCTS



resource tracking



bee health



decision support



Exploring honey bee food supply. CRC researcher Joanne Picknoll (left) with Iris Sietsma from Radboud University, Netherlands





The CRC model also lets beekeepers explore how changes to the plant species mix and hive stocking rate can affect their colony's resource demands, including how much they collect, consume and store.

In another first, the model lets beekeepers examine an unlimited number of hive and plant species combinations and predict their effect on honey production.

There is still more work to be done to determine how much nectar and pollen all the local plants produce even though the study included field investigations of nectar production by local plant species and a desktop study of past research.

Apiarists are vital to our research because they have extensive knowledge about our local flora and the amount of honey produced from it.

While this CRC research was done with the beekeeper in mind, the model can also support habitat recovery plans to ensure sustainability through pollination and seed production.

Modifications would enable this model to assess the impact of pollination services on bee health and explore the option of year-round bee management at the site.

