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Queen-bee-scented helium balloons help identify local species

A net filled with pheromone-soaked 'dummy queens' attached to a helium-filled weather-balloon is the latest tool being used by pollination researchers in their efforts to better understand the number of honey bee colonies in an area.

Recently employed on the NSW north coast, and being conducted around Australia, the research aims to give growers an insight into where their bees are coming from – feral colonies or through managed hives - and how effective those sources are.

The work is being conducted as part of the four-year project 'Assessing honey bee colony densities at landscape scales', supported by [AgriFutures Australia](#), though funding from the Australian Government Department of Agriculture and Water Resources as part of its Rural R&D for Profit programme, as well as Hort Innovation. The project is being led by the University of Sydney with further support from Almond Board of Australia, Lucerne Australia, Costa Berries, and Raspberries and Blackberries Australia.

University of Sydney researcher Dr Michael Holmes said the work aims to determine how many bees are in an area of up to a 1km radius, helping growers identify whether there are enough bees to pollinate a crop adequately.

"Large-scale farms often bring in paid pollination services. This work will tell us if those services are sufficient or if growers need more bees to ensure the right level of pollination," he said.

"Through this research, we can also identify if the bees are from managed hives or if they are coming from the feral colonies that are nearby."

Dr Holmes said after male bees are attracted to the 'dummy queens' in the net fixed to the helium balloon, his team then genotypes them.

"Once we have captured the bees, we analyse them to work out if they are related or not by determining if they have the same queen bee mother. There is only one queen per colony, so from that, we can work out how many colonies are in the sample area, which is about a 1km radius."

Costa Berries horticultural manager for the berry category, Andrew Scheuer, said the work is important because pollination is critical to the adequate production of berries, but there are still a lot of unknowns.

"The European honeybee is a tool that we use, but we don't really understand a lot about it. With further understanding, our production outcomes could certainly benefit," he said.

Hort Innovation chief executive John Lloyd said the research and development corporation set up a dedicated Pollination Fund last year to help the horticulture industry meet challenges around pollination.

"It can be easy to take current pollination processes and practices for granted," Mr Lloyd said.

"But with growing global concern about bee health and new, exciting advancements in science, the industry is now able to focus its efforts on exploring what's impacting bees, and how we can pollinate more effectively using methods that we may have overlooked in the past."

In Australia, pollination-dependant crops have been estimated to be worth over \$4.3 billion per annum based on 2005-2006 data, with the direct contribution by honeybees (*Apis mellifera*) estimated to be more than \$1.6 billion.

The bee balloon research is part of a broader pollination project that involves the investigation of the pollinator contributions to nine crops including almond, lucerne seed, apple, pear, berries, mango, melon and canola. Researchers are also looking to re-establish native vegetation to support pollinator food and nesting resources to optimise crop yield and strengthen pollinations security.

To see the bee balloon in action, see [this video](#). The [Pollination Fund](#) program is supported by the Hort Frontiers initiative, a new investment model created by Hort Innovation to address critical issues facing the future of Australian horticulture. **MEDIA CONTACT:** Kelly Vorst-Parkes on 0447 304 255 or Kelly.vorst.parkes@horticulture.com.au

