SAMPLING PROGRAM FOR JARRAH,MARRI,YATE AND POWDERBARK HONEY FROM WA

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Introduction

Western Australia has two commercially important endemic eucalypt species historically noted as highly antimicrobial (Manning 2011; Irish et al. 2011) these are Jarrah and Marri honeys. Two others, Yate and Powderbark are also to be explored as part of this research project.

A sampling program was designed to explore natural variability, source location differences and beekeeper practice in producing Mono-floral honey from varied sites in WA across different seasons.

From this collection compositional and palynological assays were conducted to identify the range of results that could be naturally assigned to each commercial species and from this an industry standard for composition produced that would allow certification of the honey varieties.

Sampling and compositional analysis also allowed harvest practice employed by the beekeepers to be optimised to retain key attributes found in these honeys.

Materials and Methods

Sampling was conducted in beekeeper's apiaries on two honey flows (Jarrah & Redgum) over two years (2016-2017; 2017-2018). New wooden framed-plastic inserted foundation ('Experimental frames') were used to gather samples. Three hives were randomly chosen in each apiary, each hive had three frames in the honey super replaced with three experimental frames (Fig 1). Every 14 days until the flow finished (i.e. 3 times), these frames were removed (Fig 2A & B) and extracted in a stainless steel hand-driven 4-frame extractor (Superinox, Lega, Italy). Between each replicate, the extractor was drained thoroughly and between each site, the extractor was washed clean and dried.

At the same time, honey was scrapped from beekeeper's frames from the same super where it was later separated into honey and wax (the wax being washed and dried). Where possible, pollen was also collected from either pollen traps or from in-coming bees at the entrance of the hives (Fig 3). Each frame in the brood box (except the two outside frames) was horizontally shaken into a large shallow tray to collect nectar that had been deposited by bees (Fig 4). Two soil samples were also taken with a 45 cm deep cutting hand-driven augur. A sample of flowering plant material was also collected for later DNA analysis. All samples were placed into either a 250 or 750 ml new plastic bottle, labelled and delivered to ChemCentre.


Fig. 1


Fig. 2A

Fig. 2B


Fig. 3


Fig. 4

Fig 1: Experimental frames in honey super (AS 3895); Fig 2A (PS Darkan) & B (AS 7532): After 14 days the experimental frames of foundation were drawn and filled – less so at the beginning and end of nectar flows; Fig 3: Pollen was sampled from traps or from incoming bees (AS 3895); Fig 4: Nectar was shaken from brood frames (AS 380).

Summary

- Forty-six apiary sites were sampled (Jarrah 2016, n=5; Redgum 2017, n=12; Jarrah 2017, n=13; Redgum 2018, n=16).
- Climate conditions influenced honey flow and its duration, and therefore the number of samples collected.
- There were observable differences in honey from new experimental and beekeeper frames (Fig 5); between brood nectar and honey (Fig 6); and between honey from different apiary sites (Fig 7).


Fig. 5

Fig. 6


Fig. 7

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Dr Rob Manning sampling Dave Leyland's apiary in Jarrah (AS 3895 Tallanalla, December 2016) photo: Madlen Kratz