Title	**Describe the queen bee and drone bee life cycles, anatomy and reproduction processes**		
Level	**4**	**Credits**	**10**

Purpose	This unit standard is intended for people working in a queen bee rearing context. People credited with this unit standard are able to describe: queen and drone life cycles, reproductive anatomy, queen egg fertilisation and caste determination as it relates to reproduction; the role of the drone when mating, mating behaviour, and effects of weather, chemicals and nutrition; and queen bee rearing impulses and pheromones.

Classification	Agriculture > Apiculture

Available grade	Achieved

Guidance Information

1 Legislation relevant to this unit standard includes but is not limited to:
- Health and Safety at Work Act 2015;
  and any subsequent amendments.

2 References
Frost, Elizabeth, *Queen Bee Breeding: Ag Guide – A Practical Handbook* (NSW Agriculture, 2016).
Woodward, David R *Queen bee: biology, rearing and breeding* (Balclutha, New Zealand: Telford Rural Polytechnic, 2007).
All references are available from Apiculture NZ, PO Box 25207, Wellington 6146, New Zealand email info@apinz.org.nz ph + 64 4 471 6254.

Outcomes and performance criteria

Outcome 1

Describe the queen and drone life cycles, reproductive anatomy, queen egg fertilisation, and caste determination as it relates to reproduction.

Performance criteria

1.1 Describe the queen and drone in terms of their life cycles and reproductive anatomy.

1.2 Describe queen egg fertilisation in terms of the process, and the reproductive organs involved.

1.3 Describe the queen and drone caste determination and synchronisation of sexual maturity for instrumental insemination.

Outcome 2

Describe the role of the drone when mating, mating behaviour, and effects of weather, chemicals and nutrition.

Performance criteria

2.1 Describe a drone congregation area in terms of the role, and the role of pheromones in mating.

2.2 Describe drone external anatomy in relation to mating behaviour.

2.3 Describe copulation between the queen and drone on the wing in terms of the process.

2.4 Describe the behaviour of the queen and drone in the hive before and after mating.

2.5 Describe mating behaviour in terms of the effects of weather.

2.6 Describe chemicals used against varroa mite in terms of their effect on level of drone semen.

2.7 Describe the effect of drone and queen nutrition levels in terms of mating behaviour.

Outcome 3

Describe the queen bee rearing impulses and pheromones.

Performance criteria

3.1 Describe the three queen bee rearing impulses in terms of queen pheromones.

3.2 Describe the three queen rearing impulses in terms of the way in which they are created in a beehive.

Planned review date	31 December 2025

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	24 January 2019	31 December 2022
Review	2	24 September 2020	N/A

Consent and Moderation Requirements (CMR) reference	0052

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact the Primary Industry Training Organisation standards@primaryito.ac.nz if you wish to suggest changes to the content of this unit standard.