

Title	Describe and prepare for artificial insemination, and artificially inseminate queen honey bees		
Level	5	Credits	4

Purpose	<p>This unit standard is intended for people working in a queen bee rearing context.</p> <p>People who are credited with this unit standard are able to: describe the advantages and disadvantages of artificial insemination, and problems caused by anatomical features of queen honey bees; rear sexually mature queen bees and drones and synchronise sexual maturity, sterilise the laboratory and equipment; catch drones and remove semen; and anaesthetise the queen honey bee with carbon dioxide (CO₂) and inseminate, and maintain records; in accordance with industry standards.</p>
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Classification	Agriculture > Apiculture
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Available grade	Achieved
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Guidance Information

- 1 All evidence presented in this unit standard must be in accordance with:
 - Workplace procedures;
 - Agricultural Compounds and Veterinary Medicines Act 1997;
 - Animal Products Act 1999;
 - Biosecurity Act 1993;
 - Biosecurity (National American Foulbrood Pest Management Strategy) Order 1998;
 - Food Act 2014;
 - Food Standards Code and Food Standard: Tutin in Honey 2016;
 - Health and Safety at Work Act 2015;
 - and any subsequent amendments.
- 2 Definition

Workplace procedures refer to the policies and procedures on safety and operation set down by the employer or organisation.
- 3 Workplace procedures are specified in the following texts:

Laidlaw, Harry Hyde, *Instrumental insemination of honey bee queens* (Hamilton, Illinois: Dadant and Sons, 1977, p144).

Woodward, David R *Queen bee: biology, rearing and breeding* (Balclutha, New Zealand: Telford Rural Polytechnic, 2007, p137).

4 Assessment

Evidence is required for insemination of at least two queen bees from at least two queen mother hives.

Outcomes and performance criteria

Outcome 1

Describe the advantages and disadvantages of artificial insemination, and problems caused by anatomical features, of queen honey bees.

Performance criteria

1.1 Describe artificial insemination of queen honey bees in terms of the advantages and disadvantages.

Range evidence of least three advantages and three disadvantages is required.

1.2 Describe queen honey bee anatomical features in terms of the problems they can present when artificially inseminating.

Range evidence of at least two anatomical features which can cause problems when artificially inseminating is required.

Outcome 2

Rear sexually mature queen bees and drones, and synchronise sexual maturity, sterilise the laboratory and equipment.

Performance criteria

2.1 Rear sexually mature virgin queen bees from selected queen mother breeder hives.

2.2 Rear sexually mature drones from drone mother hives.

2.3 Synchronise the sexual maturity of queen bees and drones for insemination.

2.4 Sterilise the laboratory and equipment and prepare for insemination

Outcome 3

Catch drones and remove semen.

Performance criteria

3.1 Remove drones from the brood and honey frames of drone mother hives, transfer to catcher boxes and then into a flight cage and maintain at the optimum temperature to remain actively flying.

- 3.2 Catch drones from the flight cage, and remove semen into a syringe without contaminating the semen.
- 3.3 Treat the tip of the syringe containing semen with antibiotics to prevent infection and desiccation.

Outcome 4

Anaesthetise the queen honey bee with carbon dioxide (CO₂) and inseminate, and maintain records.

Performance criteria

- 4.1 Anaesthetise the queen honey bee, and regulate flow rate of CO₂ gas during insemination to maintain anaesthetic state.
- 4.2 Inseminate the queen honey bee with the required amount of semen and mark according to year of insemination.
- 4.3 Place the queen honey bee back into the original nucleus hive when recovered from anaesthetic, then remove the queen and re-gas with CO₂ 24 hours before or after insemination.
- 4.4 Place the queen honey bee back in the original nucleus hive when fully recovered and monitored for egg laying.
- 4.5 Maintain records.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 August 2009	31 December 2019
Review	2	24 January 2019	31 December 2022
Review	3	24 September 2020	31 December 2022

Consent and Moderation Requirements (CMR) reference	0052
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.