



Australian Government

AHCBEK402 Perform queen bee artificial insemination

Release: 2

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Modification History

Release	Comments
Release 2	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 3.0.
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 1.0.

Application

This unit of competency describes the skills and knowledge required to determine suitable method for artificial breeding objectives and develop a program to collect semen from drone honey bees and artificially inseminate a queen bee.

The unit applies to advanced beekeepers who analyse information and exercise judgement to complete specialised bee breeding activities. They work autonomously and have accountability for the work of others. They research, analyse, design and communicate solutions to a range of complex problems.

State and territory legislation, regulations and local government by-laws apply in some jurisdictions to beehive ownership and compliance with biosecurity codes of practice.

Pre-requisite Unit

Nil

Unit Sector

Beekeeping (BEK)

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Determine breeding method	1.1 Review options for artificial breeding to determine the most suitable and affordable method in line with breeding objectives 1.2 Select an artificial breeding option according to workplace

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	breeding program and queen and drone management program 1.3 Identify, source and arrange resource requirements for breeding program 1.4 Prepare program schedules based on available resources 1.5 Identify health and safety in the workplace hazards and hygiene practices, assess risks and implement control measures 1.6 Select, ensure serviceability, fitted and used personal protective equipment during insemination process
2. Implement breeding method	2.1 Obtain genetic material ensuring its health, reliability and legitimacy according to required bee characteristics and breeding objectives 2.2 Receive, check and store genetic material to ensure maximum viability for program outcomes 2.3 Manage rearing times to ensure age and condition of breeding bees occurs according to schedule 2.4 Collect semen from drones according to workplace hygiene and collection procedures 2.5 Prepare queen and inseminate ensuring minimal risk of contamination according to workplace protocols 2.6 Place queen in a colony of suitable strength and monitor colony development and health according to workplace procedures
3. Monitor and maintain program	3.1 Review genetic material transfer and management practices to inform future breeding programs 3.2 Document performance data in progeny resulting from genetic material transfer programs 3.3 Calculate and use success rates from breeding objectives to determine success of artificial insemination program 3.4 Identify and record modifications to queen and drone management program to assist continuous improvement processes

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Reading	Critically analyse scientific texts and extract technical information for bee breeding
Writing	Documents outcomes and changes to breeding programs using industry relevant terminology
Numeracy	Performs mathematical calculations to analyse queen and hive performance following breeding program
Navigate the world of work	Takes full responsibility for following policies, procedures and legislative requirements for safety and hygiene
Get the work done	Accepts responsibility for planning and sequencing bee breeding tasks and workload

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AHCBEK402 Perform queen bee artificial insemination Release 2	AHCBEK402 Perform queen bee artificial insemination Release 1	Minor changes to Performance Criteria for clarity Updated Performance Evidence and Knowledge Evidence	Equivalent unit

Links

Companion Volumes, including Implementation Guides, are available at VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72>

Assessment Requirements for AHCBEK402 Perform queen bee artificial insemination

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Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit. There must be evidence that the individual has demonstrated artificial insemination on at least one occasion including:

- reviewed options and developed artificial breeding objectives
- selected and scheduled an artificial breeding option for breeding program
- obtained resources and determined artificial insemination activities
- identified hazards and risks and implemented control measures
- selected, fitted and used appropriate personal protective equipment (PPE)
- obtained and ensured genetic material complied with breeding characteristics and objectives
- received, checked and stored genetic materials to ensure maximum viability
- ensured queen and drone maturity and breeding cycles aligned
- prepared queen and drone honey bees for artificial insemination
- used appropriate techniques to extract semen from drones and inseminate queens
- complied with required hygiene practices
- introduced inseminated queen bees to new hive and monitored progress and success
- reviewed and documented genetic material transfer and management practices
- determined the success of artificial insemination program by calculating success rates
- maintained records in relation to an artificial insemination program.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- principles and practices of artificial insemination of queen honey bees

- anatomy and physiology of reproductive organs and reproductive process in queen and drone honey bees
- genetics and inheritance for bee characteristics required in genetic material, including:
 - honey bee health
 - abnormalities
 - productivity
 - habit
- artificial breeding methods and the benefits and limitations
- identification systems for queen and drone honey bees and semen
- physical resource requirements for artificial insemination practices
- safe handling and transportation of bees and genetic material
- artificial insemination policies and recording and reporting requirements
- preparation requirements for artificial insemination
- semen collection and preparation processes
- reviewing and maintaining effective insemination procedures.

Assessment Conditions

Assessment of skills must take place under the following conditions:

- physical conditions:
 - a laboratory or an environment that accurately represents workplace conditions
- resources, equipment and materials:
 - live queen bees and donor drones
 - tools and equipment for collecting sperm and inseminating queens
 - PPE for hygiene and safety
- specifications:
 - workplace procedures for laboratory operations
 - workplace specifications for bee breeding.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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