

# **The British Beekeepers Association**

**Examinations Board**



**Standards in Honeybee Husbandry**

**A Route towards Beekeeping Excellence**

**SYLLABUS**

for the

**Honey Bee Breeding Certificate**

# **Honey Bee Breeding Certificate Syllabus**

**Applicable from January 2020**

## **Aims**

To encourage an improvement in the skills and methodology applied to the selective breeding of honey bees that are adapted to local conditions and have desirable characteristics.

The Candidates will be able to demonstrate a range of beekeeping skills related to queen rearing, honey bee breeding and selection.

## **Conditions of Entry**

### **Individual candidates**

A Candidate may enter the Assessment as an individual, by submitting an Application Form to the Secretary to the Board by 28<sup>th</sup> February in the year of the Assessment.

The Candidate shall have been awarded the BBKA Basic Certificate. The date when this certificate was awarded shall be entered on the Application Form.

The Candidate shall have kept and managed bees for at least five years and be able to demonstrate with documentation that they have run a bee breeding program for the last three years, producing a number of queens appropriate to the number of colonies they were managing at that time. In the year of the Assessment, the Candidate should have available at least eight productive colonies excluding nuclei

### **Candidates from bee breeding groups**

A Candidate may enter the Assessment as a member of a bee breeding group, by submitting an Application Form to the Secretary to the Board by 28<sup>th</sup> February in the year of the Assessment.

The Candidate shall have been awarded the BBKA Basic Certificate or an equivalent certificate acceptable to the Board. The date when this certificate was awarded shall be entered on the Application Form.

The Candidate shall have kept and managed bees for at least five years and be able to demonstrate with records that they have been an active member of the bee breeding group for a minimum of three years, producing a number of queens appropriate to the number of colonies managed within the group. In the year of the Assessment, the Candidate should have available at least eight productive colonies excluding nuclei.

At the Assessment, the Candidate will be assessed alone, but may use the assets of the bee breeding group if required, for the purpose of the Assessment. The records submitted may be the common records of the group.

## **The Assessment**

The Assessment will take place at the Candidate's apiary in one visit in May, June or July. In the case of a Candidate who is a member of a bee breeding group, the Assessment may be conducted at the apiary used by the group if this apiary has a minimum of eight colonies excluding nuclei. The Assessment is expected to last about three hours excluding time for travel between apiaries. Two Assessors appointed by the Board will test the Candidate's practical skills in honey bee breeding and selection, record keeping and their theoretical knowledge through an oral examination as defined in the Syllabus. The Candidate will be expected to conduct four tasks, taken from the list of practical skills. The candidate will be expected to obtain a pass in all sections of the assessment.

Assessors will use standardised assessment sheets supplied by the Examinations Board so that the outcome may be moderated.

The Board may wish a trainee Assessor or Board member to be present as an observer.

## **Equipment**

The Candidate will ensure sufficient equipment is available to support the performance of four tasks as defined in the Syllabus.

## **Award of Certificate**

There are no grades given. The Candidate either reaches the required standard or not. The Candidate will normally be informed of the outcome within six weeks of the Assessment. The Certificate will be sent to the Local Examination Secretary for presentation to the successful Candidates at a later date.

# Honey Bee Breeding Certificate

## SYLLABUS

### General

- 1.1. The Assessment will take place at the Candidate's apiary and may be expected to last about three hours. Where Candidates have multiple apiaries the Assessors should not be expected to visit more than two apiaries.
- 1.2. The Candidate will have a copy of the colony records used for the Assessment for the last three years and a timetable of the queen rearing program for the current year.
- 1.3. The practical assessment will be conducted on any suitable day agreed with the Assessors, normally in May, June or July. The candidates bees must be good tempered and not follow more than about 5 metres from their hive.
- 1.4. A minimum of eight colonies shall be made available for examination. The Assessors will confirm that the colonies and the breeder queens have adequate identification to facilitate the maintenance of accurate records and the pedigrees.
- 1.5. At the time of the assessment, the majority of the breeder queens used in the current year will have been locally mated and from the candidates own breeding programme.
- 1.6. Ideally, the Candidate will have taken some actions to manage the mating. These will be confirmed by the Assessors on the day of the Assessment. While open mating is acceptable, evidence of selection on the maternal line is essential as a minimum.

### Tasks to perform

The Candidate will be required to **demonstrate four** of the following tasks selected by the Assessors:

- 2.1. A method for the assessment of a colony for defensive behaviour.
- 2.2. A method for the assessment of a colony for hygienic behaviour.
- 2.3. A method for the assessment of the level of varroa infestation.
- 2.4. A method for the assessment of the level of inbreeding in a colony.
- 2.5. Select a frame with larvae suitable for grafting and outline the criteria used.
- 2.6. Graft larvae as method of queen rearing suitable for large scale queen production.
- 2.7. A method of queen rearing suitable for small scale queen production (Miller, Alley, Cupkit, Jenter, Hopkins etc.).

- 2.8. How to set up a queen cell starter colony.
- 2.9. How to set up a queen cell raising/finishing colony.
- 2.10. How to set up a mini mating nucleus for the introduction of a queen cell or a virgin queen
- 2.11. How to set up a full frame mating nucleus
- 2.12. Marking and clipping of a queen
- 2.13. Caging of a queen with attendant workers in queen introduction cage

## **Practical Beekeeping**

The Candidate will be able to **discuss** and show understanding of the following, in relation to their colonies:

- 3.1. The procedures used up to the time of the Assessment in the breeding program and explain what has yet to be done.
- 3.2. The intended use for the queens that have successfully mated.
- 3.2. The progress of the colonies as described in the records and the intentions for the rest of the season.
- 3.3. Methods of beekeeping and how these are influenced by local conditions. Reference will be made to the choice of hives from those types commonly in use in the area.
- 3.4. The specifics of local climatic, topographical or floral conditions that may influence the selection goals and suitability of given strain of honey bees.
- 3.5. The methods used to date for progeny assessment of the breeder queens.
- 3.6. Any measures taken to control of mating and methods used.
- 3.7. The methods available and used to distinguish between different strains of honey bees.
- 3.8. The methods used for the introduction of mated queens in colonies and the precautions taken.

## Record Keeping

- 4.1. Comprehensive records should have been kept for at least three years prior to the Assessment and be available for inspection by the assessors.
- 4.2. The records should clearly indicate:
  - The criteria used for selecting the breeder queens
  - Results from the progeny assessment of the breeder queens
  - Clear methods for identification of queens and colonies
  - Production records relevant to colony performance (honey yield etc).
- 4.3. The records should also include apiary lay out, showing the location of each colony in the apiary and how they are marked.
- 4.4. Pedigrees of breeder queens showing the lineage and kinship of locally mated queens used in the breeding program for a minimum of three generations. As a minimum, there should be a clear identification of the maternal lines on the pedigrees.
- 4.5. Evidence of selection and breeding - the records should demonstrate how the performance of colonies in the past has influenced the decision to use their queens as breeder queens in future.
- 4.6. The records **may** also contain other information relevant to husbandry operation such as:
  - Feeding.
  - Frames/supers added or removed.
  - Swarm control activities.
  - Disease control activities including the use of all medicines.
  - Details of swarms collected.
  - Quantity of stores
  - Available space

## Topics for Oral Discussion

The Candidate will be able to **describe** the following and explain their relevance to practical beekeeping:

- 5.1. The different races of honey bees commonly used in Europe and their characteristics.
- 5.2. The function of the mandibular gland and its role related to larval development and queen mating.
- 5.3. The factors in the production of brood, which result in workers, drones and queens.
- 5.4. The mating behaviour of drones with queens including the importance of Drone Congregation Areas.
- 5.5. The main stages in the development of the queen from egg to emerging adult.

- 5.6. The life expectancy of queens, factors affecting it and means of extending the productive life of valuable queens.
- 5.7. The nutritional requirements of honey bees and their main sources, particularly in relation to queen rearing operations and their timing.
- 5.8. The factors that may give rise to swarm, supersedure and emergency queen cells.
- 5.9. Parthenogenesis, especially as applied to the reproduction of hymenoptera.
- 5.10. Compare and contrast natural and artificial selection.
- 5.11. The common methods of queen rearing.
- 5.12. The importance of genetic diversity.
- 5.13. The genetic basis of sex determination.
- 5.14. The importance of drones and factors affecting the quality of the drones produced.
- 5.15. Discuss the advantages and disadvantages of inbreeding and outbreeding (heterosis).
- 5.16. Interaction of genes and the environment.
- 5.17. Setting up a standardised colony for progeny assessment of breeder queens.
- 5.18. Effect of pathogens, poisoning and pests on the success of a queen rearing operation.

## **Application to enter**

This should be submitted directly to the BBKA Examinations Board Secretary at the Address given below. Applications are required not later than 31<sup>st</sup> March in the year the Assessment is to be taken.

### **Application Form**

Any application must be accompanied by a completed Application Form together with the examination fee. Cheques should be made payable to BBKA. The dates when relevant certificates were obtained must be entered on the Application Form. Certificates should not be sent.

### **Assessment Fee**

Details of the Assessment fee and the application Form can be obtained from the BBKA website.

## **AUTHORITY**

The above is issued by the BBKA Examinations Board and all communications in respect of this Assessment should be addressed to:

The Secretary,  
BBKA Examinations Board,  
The British Beekeepers' Association,  
The National Beekeeping Centre  
Stoneleigh Park,  
Kenilworth,  
Warwickshire.  
CV8 2LG

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