

SCOTTISH BEEKEEPERS' ASSOCIATION

SCOTTISH APIARIAN CERTIFICATE

Issue December 2019

AIMS

To further improve the standard of beekeeping in Scotland by equipping beekeepers to manage their own bees to a very high standard and have the ability to pass on their knowledge to less experienced beekeepers and the general public.

1. To give knowledgeable beekeepers the confidence to mentor new and less experienced beekeepers and become the trainers of the future.
2. To give experienced beekeepers the confidence to give demonstrations on all aspects of practical beekeeping to other beekeepers and to the general public in a safe and competent manner.
3. To give experienced beekeepers the confidence to give lectures on a wide range of topics to groups of beekeepers and the general public.
4. To be able to carry out adult bee diseases diagnosis and give advice to others on the procedure to adopt if disease is found.
5. To give experienced beekeepers the opportunity to obtain the SCOTTISH APIARIAN CERTIFICATE.

CONDITIONS OF ENTRY

1. The Candidate shall have gained the SCOTTISH INTERMEDIATE PRACTICAL CERTIFICATE. The date when this certificate was obtained shall be entered on the application form.
2. The Candidate shall have owned and managed continuously at least five colonies of bees for at least seven seasons.
3. The appropriate application form and fees shall have been received by the Education Convener prior to the deadline published in the Scottish Beekeeper Magazine and on the SBA Website.

AWARD OF CERTIFICATES

1. The SCOTTISH APIARIAN CERTIFICATE will be awarded at three levels:

Pass	60-69%
Credit	70-79%
Distinction	80%+

2. A Candidate who has gained the SCOTTISH MICROSCOPY CERTIFICATE will not be required to sit the DIAGNOSIS OF ADULT BEE DISEASES section of the Practical Examination – Section A2, but shall be required to answer the oral section B2.
3. A Candidate who has gained the SCOTTISH HONEY JUDGE CERTIFICATE will not be required to sit the PRODUCTS OF THE HIVE section of the oral examination.
4. The SCOTTISH EXPERT BEEKEEPER CERTIFICATE will be automatically awarded to a Candidate who has gained both the SCOTTISH APIARIAN CERTIFICATE and the SCOTTISH ADVANCED MODULE CERTIFICATE.

SYLLABUS

Introduction

The Examination consists of four parts a) a Practical Examination, b) an Oral Examination, c) conducting an Apiary Demonstration, d) a Lecture to a Local Association Meeting

General

- 1.1 The Candidate's apiary, extraction and bottling plant, storage facilities for supers, brood boxes not in use and honey, shall be available for the examination.
- 1.2 Extraction and honey-handling equipment must comply with the current legal requirements for food processing and packing; to include facilities for cleaning, weighing and storing.
- 1.3 The Candidate shall have samples from their own apiary of clear, set and comb honey, and a wax product available for inspection.
- 1.4 The Candidate shall provide all equipment for opening and handling colonies and performing manipulations at the request of the Examiner.
- 1.5 The Candidate shall provide microscopes and other equipment for checking for adult bee diseases.
- 1.6 The Candidate shall provide a suitable sample of freshly killed bees for checking for adult bee diseases.
- 1.7 The apiary demonstration will be held at a nearby Local Association 'field day'.
- 1.8 The lecture will be held at a Local Association (eg. evening) meeting.
- 1.9 For 1.7 and 1.8, above, the audience, other than the organising committee, need not be aware that the Candidate is under examination. The Candidate will be expected to answer questions from the audience in both instances.
- 1.10 The examination will be conducted in three parts (Sections 1.1 – 1.6, 1.7 and 1.8). Separate Examiners may conduct the three parts of the examination.
- 1.11 The assessments will be arranged to the mutual convenience of the candidate and the Examiner(s) and, for 1.7 and 1.8, a Local Association Organising Committee.
- 1.12 Two Examiners, approved by the Education Committee will conduct the examination.

One of the examiners shall be the Lead examiner, who, after discussion with the second examiner shall adjudicate on the mark to be awarded for the exam section being undertaken (Practical, Lecture or Demonstration)

Normally, except for the DEMONSTRATION and LECTURE, only the Examiners and the Candidate will be present. Should the Education Committee wish a Trainee Examiner or a member of the Education Committee to be present as an observer, the Candidate will be informed prior to the examination.

(A) Practical Examination

1.0 MANIPULATION – Approximately 30 minutes

1.1 Manipulations will be performed with due regard to the welfare of the bees and the safety of spectators.

1.2 The Candidate will explain the procedure being performed as if they were demonstrating to an audience.

1.3 Two manipulations will be carried out at the request of the Examiner and will be chosen from the following list:

- (i) finding, clipping and marking a queen, (using a drone),
- (ii) inspection for brood diseases,
- (iii) requeening a colony,
- (iv) uniting two queenright colonies,
- (v) a method of swarm control,
- (vi) testing for varroa resistant to a particular miticide

and answer questions related to the manipulation being performed.

2.0 DIAGNOSIS OF ADULT BEE DISEASES – 45 minutes

The Candidate shall be able to:

2.1 set up and use a dissecting and a compound microscope;

2.2 demonstrate the method of checking for Acarine disease and describe what they would expect to see if Acarine was present;

2.3 demonstrate the method of checking for Nosema apis, Nosema ceranae and Amoeba and describe what they would expect to see if any of these diseases were present;

2.4 explain what action to take should any of the above diseases be found.

3.0 QUEEN REARING - 30 minutes

The Candidate shall be able to carry out two of the following manipulations at the request of the Examiner:

3.1 demonstrate a method of obtaining five to ten queen cells from a strong queenright colony which is not preparing to swarm;

- 3.2 demonstrate how to prepare a nucleus to receive a sealed queen cell for mating purposes and explain the precautions to be taken to optimise the chances of obtaining a mated queen;
- 3.3 demonstrate the method of making up a cell raising colony suitable for introduction of grafted larvae;
- 3.4 demonstrate a method of selecting larvae suitable for grafting and grafting them into prepared queen cups and answer questions related to the manipulations being performed.

(B) Oral Examination – 45 minutes

1.0 PRACTICE OF BEEKEEPING

Much practical beekeeping will have been examined during the Scottish Intermediate Practical examination.

The Candidate shall be able to discuss:

- 1.1 advice to be given to beginner beekeepers on purchase of equipment, acquisition of bees and pitfalls for the unwary;
- 1.2 the concept of bee space and how it is applied in hive construction;
- 1.3 the range of hives and frame types available on the British market;
- 1.4 the merits and demerits of various methods of frame spacing;
- 1.5 the optimum site for an apiary and the criteria used to decide the number of colonies which it can contain profitably;
- 1.6 the problems associated with drifting and how it can be minimised;
- 1.7 how and when to feed bee colonies and nuclei to avoid their being robbed out;
- 1.8 the causes and dangers of robbing and methods of dealing with it once started;

- 1.9 the value of good nutrition in the development of a colony;
- 1.10 the management of colonies for the production of honey from:
 - (i) oil seed rape,
 - (ii) bell heather,
 - (iii) ling heather;
- 1.11 the management of colonies for the production of cut comb and section honey;
- 1.12 natural and artificial swarming;
- 1.13 methods of handling bad tempered colonies so that they do not become a nuisance to apiary visitors and members of the public;
- 1.14 how to requeen a very bad tempered colony.

2.0 HONEYBEE DISEASES, PESTS AND POISONING

The Candidate shall be able to discuss:

- 2.1 the field diagnosis of AFB and EFB, action to be taken if either is suspected and how these diseases are spread;
- 2.2 the destruction of diseased colonies and subsequent sterilization of hives and personal equipment;
- 2.3 methods of monitoring for the presence of varroasis and associated viruses and Integrated pest management methods for its control;
- 2.4 the signs, cause and possible treatment of chilled brood, chalk brood and sac brood;
- 2.5 the method of fumigating combs with glacial acetic acid, including precautions taken;
- 2.6 the signs and symptoms of poisoning by natural substances, pesticides, herbicides, fungicides and other chemicals and the actions to be taken if poisoning is suspected;
- 2.7 the crops likely to be sprayed with chemicals harmful to bees and precautions which can be taken to protect colonies when notification of intention to spray has been given;
- 2.8 the damage by wax moths to stored combs and methods of preventing this infestation;
- 2.9 other potential pests and diseases which might be found in Britain in the future.

3.0 BREEDING HONEYBEES

The Candidate shall be able to discuss:

- 3.1 their method of record keeping;
- 3.2 the criteria used when selecting breeder queens and drone colonies;
- 3.3 the recognition of queen cells produced under emergency, supersedure and swarming impulses;
- 3.4 methods of obtaining five to ten good quality queens;
- 3.5 the formation of nuclei, including mini-nucs, for the purpose of queen mating;
- 3.6 methods of introducing mated queens;
- 3.7 the setting up of mating nuclei and precautions to be taken;
- 3.8 the mating behaviour of virgin queens and drones including the roles of pheromones and drone congregation areas;
- 3.9 the recognition and possible causes of laying workers and drone laying queens and methods of dealing with these;
- 3.10 the recognition of in-bred queens and their effect on worker numbers;
- 3.11 the relative merits of clipping and marking queens and the optimum time to perform these tasks.

4.0 PRODUCTS OF THE HIVE

The Candidate shall be able to discuss:

- 4.1 the main regulation requirements for extraction premises and labelling of honey packs;
- 4.2 methods of uncapping, extracting and straining honey;
- 4.3 methods of dealing with oilseed rape and ling honey;
- 4.4 methods of storing honey;
- 4.5 how to reduce the effects of HMF;

- 4.6 methods of determining the moisture content of honey;
- 4.7 the production of liquid honey for sale including a method of delaying granulation for up to six months;
- 4.8 the production of soft set honey for sale by seeding, suggesting temperatures to obtain optimum results;
- 4.9 the preparation of cut-comb, section and chunk honey for sale;
- 4.10 how honey can be spoiled, with reference to moisture content, temperature and the presence of yeast;
- 4.11 the factors affecting nectar secretion and variations in its composition in different plant species;
- 4.12 the origin and characteristics of honeydew;
- 4.13 methods of recovering saleable beeswax from old combs and cappings;
- 4.14 the commercial uses of beeswax, pollen, propolis and venom.

(C) DEMONSTRATION — 20 to 40 minutes, as required

- 5.1 The Candidate shall give a demonstration of some aspect of practical beekeeping at a Local Association 'field day'. The subject to be chosen shall fit into the programme devised by the Local Association in consultation with the Examiner.
- 5.2 The Candidate will have carried out a risk assessment prior to the demonstration.
- 5.3 The Candidate shall carry on a running commentary while demonstrating and be able to answer questions posed by members of the audience.

(D) LECTURE — 25 to 60 minutes, as required

- 6.1 The Candidate shall give a lecture at a Local Association meeting, probably during an evening, on a topic chosen by the Candidate in consultation with the Local Association and the Examiner
- 6.2 The lecture shall consist of a short introduction to the chosen topic, followed by the body of the lecture and finally a short summary or list of main points.
- 6.3 The Candidate will be expected to make full use of visual aids and/or a PowerPoint presentation as appropriate.
- 6.4 The Candidate will answer questions posed by members of the audience.

6.5 SUGGESTED TOPICS FOR LECTURE

- 1. Autumn and winter management.
- 2. Spring management.
- 3. Fumigation of combs.
- 4. Feeders and feeding.
- 5. Supers and supering.
- 6. Monitoring for varroa.
- 7. Integrated pest management.

8. AFB and EFB.
9. Reading a colony.
10. Three types of queen cells.
11. Swarming.
12. Methods of swarm prevention.
13. Swarm control.
14. Artificial swarming.
15. Demaree method of swarm control.
16. Clearing supers.
17. Extraction of honey.
18. Making and using nuclei.
19. Queen rearing.
20. Uniting colonies.
21. Honey production.
22. Comb honey production.
23. Recognition and treatment of laying workers and drone laying queens.
24. Preparation of soft set honey.
25. Honey labelling regulations.
26. Hygiene regulations when handling honey.
27. Record keeping, including medicinal records.
28. Nectar and pollen sources in your area.
29. Introduction to bees and beekeeping
30. Choosing hives and frames.

Reading List

GENERAL

- Guide to Bees and Honey Ted Hooper Northern Bee Books, ISBN 0-978-1-904846-51-2
- The Buzz about Bees Jurgen Tautz Springer, ISBN-978-3-540-78727-3
- A Practical Manual of Beekeeping David Cramp Spring Hill, ISBN 978-1-90586-223-8
- Practical Beekeeping Clive de Bruyn Crowood Press, ISBN-10: 1861260490 &
ISBN-13: 978-1861260499
- Sixty Years with Bees Donald Simms Northern Bee Books, ISBN 0-907908-74-8
- Insect Bites and Stings – A Guide to Prevention and Treatment Riches H R C, 2003, softback
IBRA ISBN-978-0860982449

Honeybee Democracy – Tom Seeley Princeton Univ Press ISBN-9780691 147215

An Introduction to Bees & Beekeeping – Scottish Beekeepers Association

BEE PLANTS, HONEY & POLLEN

- Plants & honeybees Aston & Bucknall Northern Bee Books, ISBN 0-393-39879-0
- Plants for Bees (2012) Kirk and Howes IBRA, ISBN 10:0-86098-271-8

ISBN 13:978-0-86098-271-5

The Wild Flower Key Francis Rose Frederick Warne ISBN 978-0-7232-5175-0

The Pollen Loads of the Honeybee:

A Guide to their Identification by Colour and Form Dorothy Hodges ISBN 0-86098-140-1

The Pollen Grain Drawings of Dorothy Hodges

(Taken from the Pollen Loads Book) – IBRA 2009 Softback 36pp ISBN: 0 86098 262 9

Pollen Identification for Beekeepers Rex Sawyer Northern BB Facsimile ISBN 1-904846-06-8

Honey Identification Rex Sawyer Cardiff University Press ISBN 978-1-904846-53-6

PESTS & DISEASES

Booklets on Bee Pests and Diseases FERA Downloads www.fera.defra.gov.uk

MICROSCOPY ANATOMY & DISSECTION

Anatomy and Dissection of the Honeybee Dade, H A 2009 Revised Edition Hardback
198pp ISBN: 0 86098 214 9

Microscopy Study Notes JD & BD Yates 2nd edition BBNO ISBN 0 905652 64 9

Practical Microscopy for Beekeepers –Bob Maurer –Becraft ISBN9780900147135

QUEEN REARING

Mating in Miniature Bernhard Mobus BIBBA ISBN 0-905369 01 7

Guide to Managing Apidea Mini-Nucs Albert Knight BIBBA

BEESWAX & MEAD

Beeswax Ron Brown BBNO ISBN 0 905652 150

Mead –Making, Exhibiting & Judging – H. Riches Northern Bee Books ISBN 9781904846260

UPDATES –Dec2016 Updated to reflect changes from Beemaster to Beekeeper in other certificates

ABREND.....