

Virginia State Beekeepers Association

Master Beekeeper Program

Journeyman Level

Study Outline – The following outline provides a list of topics with which one should be familiar before taking the written and practical exams for the Journeyman level. Most of the topics will be covered in intermediate level beekeeping courses and are reviewed in many beekeeping texts.

Honey Bee Biology:

A. Basic Honey Bee Biology, Physiology, and Colony Organization as required for the VSBA MBP Apprentice Level.

B. Honey Bee and Colony Biology

Swarming:

- Causes of swarming
- Colony preparations for swarming (queen production, queen weight loss, etc.)
- Time of swarming (season, relative dates for local area)
- Nest site selection and swarm movement
- What management practices are used for swarm control and how do they relate to swarm preparations
- Describe practices for swarm capture and trapping Queens and Re-queening:
- Queen pheromones –What pheromones (groups) do queens produce and what functions do they have (QMP, Retinue pheromones, egg pheromones)?
- How are the major queen pheromones distributed in the hive?
- What factors are important in queen recognition and what additional factors are important in queen replacement (re-queening)?
- Describe at least three methods for re-queening a hive. What method(s) is/are the most effective and why?
- When should colonies be re-queened and what are the reasons for re-queening?

Winter Biology:

- What adaptations do honey bees have to survive winters in temperate climates?
- Describe the winter cluster and how bees regulate temperature.
- Describe the winter brood rearing cycle.
- Describe fall and winter management practices and how they are related to colony biology.
- How strong should colonies be for wintering and why is colony strength important?
- What pests/diseases are of major concern during the winter?

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Bee Diseases and Pests

A. Bacterial Diseases

- Describe the biology, cause, symptoms, and field recognition cues for American foulbrood and European foulbrood
- Why is AFB such a serious problem?
- What chemical (antibiotic) treatments are available for AFB and EFB? What non-chemical treatments are available?

B. Viral Diseases

- What is the major virus disease of brood? Describe its biology and symptoms. What treatments are recommended?
- What is Deformed wing virus and how is it spread?
- What are the major paralysis diseases of adult bees and what is their significance?

C. Other Diseases

- What is *Nosema* and why is it important? Describe the general biology of *Nosema (apis and ceranae)* and its impact on bees?
- How is *Nosema* diagnosed in the field?
- How is *Nosema* treated?
- What is chalkbrood and how does it affect bees? What causes the disease?
- What treatments are available for chalkbrood?

D. Honey Bee Mites

- Describe the general biology and life cycle of the *Varroa* mite.
- What problems do varroa mites cause?
- Describe four methods for sampling bee colonies for varroa.
- What thresholds should be used for deciding the treatment of colonies for varroa?
- What miticides are registered for varroa control and how are they used?
- What non-chemical approaches can be used for varroa control/management? How effective are they?
- What is PMS?
- Describe the general biology and life cycle of the tracheal mite.
- What problems do tracheal mites cause?
- How does one sample for tracheal mites?
- What treatments can be used for tracheal mites? Is treatment necessary?

E. Other Health Related Problems

- What is CCD and what are the symptoms?

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- What should be done with a colony/equipment thought to have CCD?
- What are Small Hive Beetles and what is their life cycle?
- How do small hive beetles impact colonies and stored equipment?
- What procedures are used to control small hive beetles?

Honey Production, Extraction and Bottling

A. Management Practices for Honey Production

- What management practices are used to insure strong colonies for honey production?
- Describe the process and strategies of supering colonies for honey production (with drawn comb and foundation; strong and weak hives).
- Argue for and against the use of queen excluders.
- When are the major honey flows in your area?
- Describe the practices used for the production of comb honey.
- What is travel staining?

B. Honey Removal from the Hive

- When should honey be removed from a hive and how do you tell if it is “ripe”.
- What are the advantages and disadvantages of the different methods for removing bees from honey supers?
- What methods should be used for the removal of section comb honey?
- How should full honey supers be stored after removal from a hive? Why?
- How should empty honey supers be handled/stored after extraction?

C. Extraction and Bottling

- What is a hot room and what is its function?
- Describe the extraction process and the steps involved.
- Describe the general steps used to clean and bottle honey.
- Describe methods to handle “wax capping’s”.
- What information needs to be on a jar label for selling honey?
- How is honey moisture content and color determined?
- How should comb honey be handled and stored? Why?

Honey Plants of Virginia

A. Nectar and Pollen Plants

- What are the major spring honey plants and when do they bloom?
- What are early spring nectar and pollen plants important to colony buildup?
- What are the major summer honey plants and when do they bloom?
- What are the major fall honey plants and when do they bloom?

Non-Honey Bee Stinging Insects

- What insects cause the most stinging problems and at what time of year do the

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major problems occur?

Be able to recognize and describe the basic biology (and life cycle) of the Yellow jackets, bald-faced hornet, and Giant European hornet. What are their nests like?

Be able to recognize and describe the basic biology (and life cycle) of bumble bees and carpenter bees.

What are “sweat bees”?

What steps would you recommend for the removal/control of a yellow jacket or bumble bee nest?

Safe Use of Pesticides

A. For each of the following materials approved for use in or around bee hives, be able to describe the procedures for safe handling, use, storage and disposal.

Apiguard

ApiLife VAR

Apistan (fluvalinate)

Bee Go (butyric anhydride)

Checkmite (coumaphos)

Fischer’s Bee Quick

Formic Acid (Mite-Away II)

Fumagillin (Fumigilin-B®; *old name Fumidil-B*)

Guardstar (permethrin)

Mite-A-Thol (menthol pellets)

Terramycin (tetracycline)

Tylan (tylosin)

Sucrocid

Paramoth (para-dichlorobenzene)

Africanized Honey Bees

What is the Africanized honey bee and what is its history?

Where are Africanized honey bees found in the U.S.?

How are AHB hives identified in the field and laboratory? Who conducts the tests?

What are the concerns about Africanized honey bees?

What should be done with a colony suspected to be Africanized?

Practical Hive Inspection – What is involved?

Be able to demonstrate proper hive inspection techniques.

Locate the queen and demonstrate at least 3 re-queening techniques.

Evaluate queen quality

Demonstrate management techniques for swarm prevention and control.

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- Demonstrate techniques for supering colonies (with drawn comb, foundation or for comb honey).
- Demonstrate colony preparations for wintering.
- Be able to demonstrate techniques for disease inspection, mite sampling.
- Demonstrate techniques for the removal of honey supers.
- Be able to explain and demonstrate hive preparations for moving.

Some suggested references for the Journeyman Beekeeper would include:

- The Hive and The Honey Bee – Dadant & Sons, Inc.
- Honey Bee Biology & Beekeeping – Dewey Caron – Wicwas Press
- What Do You Know ~ Clarence H. Collison – Root Publications
- Honey Plants of North America – John H. Lovell – A I Root Co.
- Eastern Apiculture Society (EAS) web site
- www.vdacs.virginia.gov
- MAAREC – Mid Atlantic Apiculture Research & Extension Consortium - <http://agdev.anr.udel.edu/maarec/>