

**MASTER BEEKEEPERS
CERTIFICATION PROGRAM**

**JOURNEYMAN
RESOURCE BOOKLET**

By the Washington State Beekeepers Association Master Beekeeper Certification
Committee

In cooperation with the Washington State Department of Agriculture and the Washington State
University, Cooperative Extension Service

2015

WASHINGTON STATE BEEKEEPERS ASSOCIATION
MASTER BEEKEEPER CERTIFICATION PROGRAM

JOURNEYMAN RESOURCE BOOKLET

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MASTER BEEKEEPER CERTIFICATION PROGRAM

INTRODUCTION

In 1983 the Washington State Beekeepers Association (WSBA) formed the Master Beekeeper Committee (MBC) to begin efforts to design a Master Beekeeper Certification Program in cooperation with Washington State University Cooperative Extension and the Washington State Department of Agriculture. The program, begun in 1985, was developed for three reasons:

- 1) To increase the knowledge of beekeepers about honey bees,
- 2) Develop a pool of people capable of dealing with the media and public on bees and beekeeping,
- 3) To provide an objective system for an individual to evaluate and measure his own level of expertise, and
- 4) To encourage membership in and support of local beekeeper associations.

The committee used elements of the North Carolina Master Beekeeper Program, and information from Pennsylvania State University and the British Columbia Honey Producers to create a program that would fit the Pacific Northwest. The WSBA Program consists of three levels: 1) Certified, 2) Journeyman, and 3) Master.

The Certified level requires beekeepers to have a minimum of knowledge and experience of beekeeping. Ten lessons designed by the MBC are provided each applicant to the program and a member of the committee instructs the student from the lesson material. The student has the opportunity to take an open book exam following the instruction or they may elect to take the exam without the instruction.

All Journeyman candidates are required to be a full member of the state organization.

The Journeyman level requires the student to have more knowledge and skills in beekeeping. It also requires the applicant to be a member of a local and/or state beekeepers association. Knowledge of colony management, public relations, state and federal laws, honey judging, sanitation, economics, obtaining 30 public service points and a minimum of two years experience is required. Students are expected to acquire information from beekeeping books and journals and other sources. A series of exams are required covering each section of the course.

The Master level requires five years of accumulated experience, thirty additional public service points, laboratory experience, or other efforts appropriate to the course of study and approved by the MBC. A workbook containing notes, photos, sketches and references of the student's work will be graded to certify completion of the course.

Many of the course lessons will be provided in conjunction with local or state beekeeper association meetings to enhance the learning opportunities of the student. In counties where active beekeeper associations do not exist an MBC member may travel to a specific location to present the material, or it may be given by the local Cooperative Extension agent. Documentation of the examinations are noted on the participant's application and progress status form and records stored in a WSU computer database.

A practical field test has been developed and approved by the MBC. Journeyman and Master level students are expected to take the test. The following elements will be evaluated:

1. General apiary appearance
2. Hive appearance - organization

3. General colony management
4. Hive manipulation expertise
5. Colony temperament
6. Colony strength, adjusted for nuc vs. parent colony and time of year
7. Apiary sanitation and cleanliness
8. Medication program - preventative
9. Knowledge of environmental factors
10. Public relations awareness

The public service points are a key element of the master beekeeper program. Points may be acquired by performing the following activities:

- A. Give a presentation about beekeeping or related topics to a non bee-keeping group.
- B. Give a presentation about beekeeping or related topics to a school group.
- C. Present WSBA or WA State approved materials to a beekeeping group.
- D. Publish an article on beekeeping or related topic in a journal, newsletters, or other publication.
- E. Serve as an officer/director/trustee of a local beekeeping organization.
- F. Work at a beekeeping exhibit open to the public, in a public-facing role.
- G. Assist a 4-H, FFA, or other youth group with a beekeeping project.
- H. Serve as an officer/board member/regional representative of the WSBA.
- I. Present a programs/lecture/demonstration on a specific beekeeping topic to a beekeeping group.
- J. Judge honey or other products of the hive at a fair or other local competition.
- K. Teach a course for advanced beekeepers.
- L. Provide one-on-one mentorship to a beginning beekeeper.
- M. Teach a course for beginning beekeepers.
- N. Perform a special programs, work effort, course, exhibit or other activity approved by the WSBA MBC. The following general rules apply:
 1. A maximum of 50% of accumulated units may be obtained in one category.
 2. 1 unit equals 1 hour, with a maximum of 3 units per presentation in categories A, B, C, I, K and M.
 3. 1 unit equals 2 hours with a maximum of 3 units per recipient in categories G and L.
 4. 5 units for an article published in a national magazine or publishing one state or local association newsletter. 2 units for an article published in a local or state newsletter as specified in category D.
 5. 15 units for serving as an elected officer for one year, and 5 units for serving as a trustee/-executive board member for one year as specified in categories E & H.
 6. 1 unit equals 2 hours in category F.
 7. 1 unit equals 1 hour in category J.
 8. A passing grade of 75 percent on examinations is required.

A certificate will be presented to each student upon completion of each level. A badge and patch are available for purchase upon completion of each level.

[Taken from: *Washington State's Master Beekeeping Program Intended to Revitalize That State's Beekeeping*, by Dr. Dan Mayer, Dick Hunger; *American Bee Journal*, Vol. 126 (3): 197-198.]

JOURNEYMAN REQUIREMENTS

Section	1.	COLONY EXAMINATION
	2.	SPRING MANAGEMENT
	3.	POLLINATION
	4.	HONEY PRODUCTION
	5.	MOVING BEES
	6.	QUEEN RAISING
	7.	POLLEN PRODUCTION & OTHER APIARY PRODUCTS
	8.	FALL MANAGEMENT
	9.	MARKETING APIARY PRODUCTS
	10.	SPECIAL ACTIVITIES

The information to be covered in the examination for Journeyman beekeeper has been outlined in this **Resource Booklet**. Most aspects of this course are well known to any beekeeper that has managed an apiary for several years or more. Additional reading has been referenced and legal requirements listed.

The Journeyman examination will be given on one section at a time. The only reference information the beekeeper will be permitted to use during the examination will be that section of this booklet with whatever notes he or she has added.

The Apiary Management & Colony Examination will be conducted in the candidate's apiary. A copy of the outline and the scorecard that will be used have been included in this booklet.

If the student has questions concerning the Journeyman requirements, please submit them to the Master Beekeeper Certification Committee for a reply.

Where trade names are used, no discrimination is intended and no endorsement by the Washington State Beekeepers Association, the Washington State Department of Agriculture or Washington State University Cooperative Extension is implied.

Literature Resource List

The Hive and the Honey Bee, 2008. Eighth Printing published by Dadant and Sons, Inc. Hamilton IL

ABC and XYZ of Bee Culture 41st Edition, published by A. I. Root Company, Medina OH

Beekeeping in the U.S., Agriculture Handbook No. 335, U.S. Government Printing Office, Washington D.C., 20402

Honey Bee Diseases and their Control, WSU Extension bulletin PNW 198.

Beekeeper Verified Report of Loss Form, Washington State Department of Agriculture Pesticide Management Division, Olympia or Yakima, WA

Evaluating Honey Bee Colonies for Pollination, WSU Extension bulletin PNW 245, 1984

Bee Pollination of Tree Fruits, WSU Extension bulletin NNW 282

Bear Protection for Bees, WSU Extension bulletin EB 1176

American Honey Plants, Frank C. Pellet, published by Dadant & Sons, Inc. Hamilton IL

The American Bee Journal, published by Dadant & Sons, Inc. Hamilton IL

Bee Culture, published by A. I. Root Co., Medina OH

The Speedy Bee, published by Troy Fore, Jesup GA

Bee Biz, published by Northern Bee Books, W. Yorkshire, England

The Biology of the Honey Bee, M. Winston. Harvard Univ. Press 1987

Nectar & Pollen Plants of Oregon & the Pacific Northwest, D.M. Burgett, B. A. Springer, L. D. Johnston. Honeystone Press, 1989

Honey-A Comprehensive Survey, Eva Crane. Heinemann: London England 1979 *Dictionary of*

Beekeeping Terms, Editor: Eva Crane. International Bee Research 1977

Bee Products - Properties, Applications & Apitherapy, Editors: A. Mizrahi, Y. Lensky. Plenum Press 1996. <http://www.plenum.com>

Breeding Techniques and Selection for Breeding of the Honey Bee, Friedrich Ruttner. Publisher, British Isles Bee Breeders Association.

Beekeeper's Handbook, D. Sammataro, A. Abitabile. Comstock Publishing Assoc. Cornell University 1998

Queen Rearing and Bee Breeding, H. Laidlaw Jr., R. Page Jr.. Wicwas Press 1997

The Illustrated Encyclopedia of Beekeeping, Editors: R. Morse, T. Hooper, E. P. Dutton, Inc. 1985.
ISBN 0-525-24243-0

Honey Bee Pests, Predators, & Diseases, Editors: R. Morse, R. Nowogrodzki Third
edition edited by R. Morse and K. Flottum 1997

Local Beekeeper Associations - reference material

Washington State University, Pullman, WA and County Cooperative Extension Service offices -
publications on honey bees.

Dr. Steven Sheppard (P.P. "Roy" Thurber Research Chair) home page: <http://apis.wsu.edu/>

National Honey Board, 390 Lashley St., Longmont, Co 80501-6045, (303) 776-2337;

www.nhb.org/.

US Honey Bee Act Regulations: www.aphis.usda.gov/ppg/ss/322regs.html

US Exotic Bee Disease Regulations: www.aphis.usda.gov/ppq/ss/319regs.html

US Government Printing Office: www.access.gpo.gov/. GPO Access User Support Team by e-
mail at gpoaccess@gpo.gov: by telephone at (202) 512-1530 or toll free at (888) 293-6498;
by fax at (202) 512-1262. GPO in Seattle WA: (206) 764-3726

Code of Federal Regulations: <http://www.gpoaccess.gov/cfr/index.html>

SECTION 1 COLONY

EXAMINATION

GENERAL SCOPE OF THIS SECTION:

Examination of the honey bee colony should occur at regular intervals, usually not to exceed three weeks in the summer, and the information obtained be correctly interpreted and recorded. Immediate action might be required if there is no worker brood, insufficient stores, or disease is discovered.

The beekeeper should be able to evaluate the various conditions encountered and put the entire yard in perspective. Necessary corrective material should be available to insure conditions upon completion of the colony examination that will encourage continued growth of a productive colony.

LEGAL REQUIREMENTS: Chapter 15.60 RCW - Apiaries

LIST OF SUBJECTS TO BE COVERED:

- A. Apiary location, identification, congestion
- B. Opening the colony for examination
- C. Check amount of brood and queen laying pattern
- D. Brood diseases and colony pest identification
- E. Medication program
- F. Adequate honey and pollen stores
- G. Queen age, pheromones and marking
- H. Propolis and bee space
- I. Temperament of the colony
- J. Supering with drawn or undrawn comb
- K. Bee sting treatment and anaphylactic shock
- L. Dead-out hive isolation and examination
- M. Catching or preventing swarms
- N. Division of labor within the colony

SECTION 2

SPRING MANAGEMENT

GENERAL SCOPE OF THIS SECTION:

The spring management program sets the pace for the year. It includes the techniques for building colony strength and/or increasing the number of colonies.

Beekeepers must identify their apiaries to comply with the law. They should also locate apiaries and field sets for minimum visibility and try to prevent swarming. Protect the public image of the beekeeper.

Public education with presentations given to schools, local service groups, and at the county fair are time consuming but very worthwhile activities. Many people do not know the difference between a wasp and a honey bee. A public that understands the importance of pollination and the control limitations we have on the activity of the honey bee will be more tolerant of our insects.

LEGAL REQUIREMENTS: Chapter 15.60 RCW - Apiaries.

LIST OF SUBJECTS TO BE COVERED:

- A. Management for pollination
- B. Management for honey production
- C. Medication and pest eradication program
- D. Making splits (divides), joining with newspaper or installing packaged bees
- E. Queen characteristics
- F. Equipment maintenance and/or replacement
- G. Frame rotation and/or reversing brood nest supers
- H. Recording observations in apiaries, colony strengths, bee diseases, etc.
- I. Swarm prevention and public service
- J. Apiary contracts
- K. Methods to reduce drifting
- L. Maintaining good public relations
- M. Insecticide problems and reporting

SECTION 3

POLLINATION

GENERAL SCOPE OF THIS SECTION:

This section requires a basic knowledge of the parts of a flower or blossom involved in the pollination process. Why do some plants require insect pollination? How can the beekeeper work more effectively with the grower for maximum efficiency?

Many growers have technical degrees in their field and work closely with consultants to get maximum crop production. A hive rental agreement stating the colony strength requirement **and** rental fee is necessary. A knowledge of pesticides and recognition of other attractive bloom within a one half mile radius helps establish the beekeeper as an expert in his field. It is our duty to present a professional image in person and in how we manage and care for our apiaries.

LEGAL REQUIREMENTS: Chapter 16-602-03 WAC - Colony strength.
Chapter 15.60 RCW - Apiaries.

LIST OF SUBJECTS TO BE COVERED:

- A. Definition of pollination
- B. Environmental difficulties
- C. Colony strength
- D. Colonies per acre per crop
- E. Honey bee foraging behavior
- F. Written pollination and land use contracts
- G. Maintaining good public relations
- H. Other species of bees
- I. Pollination planning and colony location
- J. Liability
- K. Pollen inserts
- L. Greenhouses, cage - pollination
- M. Economic of pollination

SECTION 4

HONEY PRODUCTION

GENERAL SCOPE OF THIS SECTION:

The beekeeper must recognize the factors essential for maximum honey production. The selection of nectar yielding locations that are not overcrowded and are not near to diseased or mite infested colonies is perhaps the first step. Huge colonies, two queen colonies, or joining colonies are the next consideration.

Apiary site contracts, particularly with government agencies must be arranged well in advance of use.

Careful separation of the honey by nectar source, uncapping a very minimum of brood and using care to prevent overheating are essential to maintain the brilliant appearance and delicate taste of our product. Food handling rules and sanitation must be understood and followed.

LEGAL REQUIREMENTS: American Beekeeping Federation Honey House Sanitation Standards

LIST OF SUBJECTS TO BE COVERED:

- A. Local nectar yielding plants and trees
- B. The Chemical and nutritional composition of honey
- C. Separating honey by flavor, color, and floral source
- D. Equipment and techniques for producing comb honey
- E. Solving the wasp problem
- F. Colony size, techniques, and equipment
- G. Contracts, fees, and special use permits
- H. Removing honey from the hive
- I. Extraction procedure and equipment
- J. Wax recovery
- K. Sanitation requirements and techniques
- L. Extended storage of honey and supers

SECTION 5

MOVING BEES

GENERAL SCOPE OF THIS SECTION:

Bees are moved so that they will be near various honey plants or to pollinate orchards and field crops. Some bees are also moved south in the fall for easier over-wintering, pollination of almonds, while also obtaining early colony build-up to make splits to replace colony losses.

The beekeeper must protect the public by loading hives at night or early morning, with equipment for moving bees in good mechanical condition. The load must be properly secured while in transit. Top screens and entrance screens may be required in case of vehicle breakdowns, and water to be sprayed on the top screens if the move includes the heat of the day.

Interstate moves require covering the entire load with a nylon net. One purpose of this section is to emphasize that the public will not tolerate hoards of bees that become a public nuisance.

The impact of honey bee diseases and pests has created inspection requirements in the states. Every beekeeper who moves bees interstate should be familiar with the respective state requirements.

LEGAL REQUIREMENTS: Chapter 15.60 RCW - Apiaries.
Chapter 16-602-020 - Apiary Inspection Fees.
The Honey Bee Act of 1922 as amended prohibits importation of honey bees except by special USDA permit.

LIST OF SUBJECTS TO BE COVERED:

- A. Legal requirements for interstate movement of hives
- B. Disease and pest inspections
- C. Public relations (PR)
- D. Colony temperature considerations
- E. Shipping packages and queens
- F. Safety procedures in case of an accident

SECTION 6

QUEEN RAISING

GENERAL SCOPE OF THIS SECTION:

Raising queens north to the 40th parallel poses limitations that must be recognized. Early spring mating flights are often not available due to weather.

Successful queen raising requires an in-depth study of the desirable genetic traits expected of the offspring. Instrumental insemination might offer controlled conditions to develop certain traits. Good public relations requires that bees are not overly defensive, unlike Africanized honey bees.

LEGAL REQUIREMENTS: Chapter 15.60 RCW - Apiaries
The Honey Bee Act of 1922 as amended prohibits importation of honey bees except by special USDA permit.

LIST OF SUBJECTS TO BE COVERED:

- A. Desirable genetic traits
- B. Disease resistant progeny
- C. Closed population breeding
- D. Mating apiary characteristics
- E. Grafting larvae
- F. Miller method
- G. Doolittle method
- H. Supersedure or swarming
- I. Instrumental insemination
- J. Requeening benefits
- K. Spring, summer, fall requeening
- L. Drone rearing
- M. Selection for hygienic behavior
- N. Selection for mite tolerance
- O. Economics of queen rearing

SECTION 7

POLLEN PRODUCTION AND OTHER BEE PRODUCTS

GENERAL SCOPE OF THIS SECTION:

The variety of products available from the bee colony should be evaluated periodically. A relatively valuable product might be available from a reduced number of colonies, require less equipment, or less labor.

New or improved equipment might be developed that enhances the profitability of a particular product. One example would be the development of the vacuum system to remove royal jelly from queen cells.

LEGAL REQUIREMENTS: Chapter 69.07 RCW - Washington Food Processing Act
Chapter 69.28 - Honey
21CFR110.3 - Current Good Manufacturing Practice in
Manufacturing, Packing, or Holding Human Food

LIST OF SUBJECTS TO BE COVERED:

- A. Pollen
- B. Beeswax
- C. Royal jelly
- D. Brood
- E. Wax moth larvae for fishermen
- F. Propolis
- G. Bee venom
- H. Bees

SECTION 8

FALL MANAGEMENT

GENERAL SCOPE OF THIS SECTION:

The primary goal of this section is to review the preparation of the colony for winter. Procedures may vary with the anticipated weather conditions. Proper medication and adequate stores are the responsibility of the beekeeper. Select winter apiary sites with features necessary to protect the colonies from the weather, damp air pockets, flooding, and drifting.

This is the time for inventory and repair of equipment, to build equipment and invent labor saving devices. Learn from the experts at the state and national bee meetings.

LIST OF SUBJECTS TO BE COVERED:

- A. Treatment for brood diseases and Nosema
- B. Sample for mite infestation
- C. Combine weak colonies (except those with mites)
- D. Advance order queens for next year
- E. Profit and loss analysis
- F. Colony security and drainage
- G. Request interstate disease inspection in August
- H. Develop management plan for next year
- I. Check out colony feeding equipment
- J. Special wintering equipment: mouse guards, Killion bottom boards/slatted rack, etc.

SECTION 9 MARKETING APIARY

PRODUCTS

GENERAL SCOPE OF THIS SECTION:

Apiary products cover a broad range of products and most of them are edible. The material in contact with the product should be stainless, glass, or approved plastic whenever possible. The workers handling the product should know the honey house sanitation rules. The reputation of the product and the health of the people using it could be endangered if human food handling regulations are not strictly observed. Medicating during the nectar flow is not legal.

Notices or reminders which state that honey should not be fed to children under six months of age should not be concealed. Labeling laws, country of origin, and nectar source apply to both state and federal requirements.

LEGAL REQUIREMENTS: US Standards for Grades of Comb & Extracted Honey
21CFR110.3 - Current Good Manufacturing Practice in
Manufacturing, Packing, or Holding Human Food

LIST OF SUBJECTS TO BE COVERED:

- A. Country of origin
- B. Adulterated honey
- C. Maximum moisture content
- D. Products that can spread disease
- E. Honey house sanitation
- F. Independent packers and cooperatives
- G. Grading, labeling, and packaging
- H. Distribution, promotion, and pricing
- I. Honey queen programs
- J. Transportation and storage
- K. Selecting advertising media
- L. Commodity loan program

SECTION 10

SPECIAL ACTIVITIES

GENERAL SCOPE OF THIS SECTION:

This section has been used to cover activities that do not fit into the nine general categories. Prepare yourself by learning, who, where, when, why, and how for each subject. Discuss the subject with a local expert. Check the annual index of the bee magazines for applicable articles.

LEGAL REQUIREMENTS: Chapter 15.60 RCW - Apiaries
Chapter 16-602-010 WAC - Apiary Advisory Committee areas

LIST OF SUBJECTS TO BE COVERED:

- A. State and local beekeeper associations in Washington
- B. Apiary Advisory Committee
- C. American Beekeeping Federation (ABF)
- D. American Honey Producers Association (AHP)
- E. Western Apicultural Society (WAS)
- F. Preparing honey and wax entries for shows
- G. Judging honey and wax entries
- H. Making mead
- I. Describe a good county fair exhibit
- J. Read Roberts Rules of Order, revised
- K. National Honey Board (NHB)

JOURNEYMAN APIARY MANAGEMENT EVALUATION

- 1. General apiary appearance**
 - a. Cleanliness
 - b. Colony entrance accessibility
 - c. Stored equipment - bee tight
 - d. Equipment stored neatly
 - e. Grass cut for fire protection
 - f. Colonies spaced for bee drift control and ease of working
 - g. Hive stands in good repair
 - h. Air drainage planning
 - i. Apiary complies with all local ordinances.

- 2. Hive appearance - organization**
 - a. Hive parts stacked properly and neatly
 - b. Equipment painted adequately
 - c. Adequate ventilation
 - d. Hives tipped forward slightly
 - e. Apiary obscured from view

- 3. General colony management**
 - a. Organization of the brood nest
 - b. Too much drone comb
 - c. Placement of the brood nest in the hive
 - d. Location and amount of pollen
 - e. Amount of honey stores
 - f. Feeding program
 - g. Supering expertise - adjusted for time of year and area
 - h. Knowledge of nectar flows - average production
 - i. Swarm prevention techniques
 - j. Requeening procedure
 - k. Two queen colonies

- 4. Manipulation expertise**
 - a. Proper use of smoker
 - b. Confidence in hive manipulation
 - c. Gentle but predictable movements
 - d. Avoid quick or jerky manipulations
 - e. Have smoker available at all times
 - f. Place hive parts close at hand
 - g. Proper lifting techniques
 - h. Place smoker on bellows on ground - reduce fire hazard
 - i. Age of comb
 - j. Comb rotation practices and knowledge
 - k. Proper use of queen excluder
 - l. Use of other equipment - pollen traps, etc.
 - m. Careful handling of comb to prevent loss or damage of queens

- 5. Colony temperament**
 - a. Knowledge of colony noises - queenless, other
 - b. Cluster density
 - c. Cluster activity - running or quiet on the comb
 - d. Guard activity - quiet or vicious
 - e. What activities affect temperament?

- 6. Colony strength - adjusted - nuc vs. parent, time of year**
 - a. Minimum nuc size
 - b. Pollination standards
 - c. Planning for the honey flow
 - d. Hive reduction for wintering - considerations, use of queen excluder
 - e. Effect of temperature on cluster
 - f. How to measure colony strength

- 7. Sanitation and cleanliness**
 - a. Proper disposal of comb scrapings
 - b. Hive tools cleaned regularly
 - c. Proper disposal of smoker fuel residue, miticides
 - d. General apiary appearance

- 8. Medication program - preventative**
 - a. Knowledge of various programs
 - b. Are procedures adequate?
 - c. Is timing adequate?

- 9. Knowledge of environmental factors**
 - a. Effect of temperature on bee flight
 - b. Effect of wind on cluster behavior and management
 - c. Agricultural chemical effect on colonies
 - d. Air drainage and movement
 - e. Effect of transportation on colonies
 - f. Effect of daylight on bee flight

- 10. Public relations awareness**
 - a. Applicable local ordinances
 - b. Water accessibility
 - c. Knowledge of other insects confused with bees
 - d. Knowledge of local and state industry leaders
 - e. Consideration of neighbors - public nuisance factors

JOURNEYMAN APIARY MANAGEMENT SCORECARD

Name: _____

Date: _____ Judge: _____

(Score 1 to 10)

1. General apiary appearance _____
 2. Hive appearance, organization _____
 3. General colony management _____
 4. Manipulation expertise _____
 5. Colony temperament _____
 6. Colony strength _____
 7. Sanitation and cleanliness _____
 8. Medication program-time of year-dosage _____
 9. Knowledge of environmental factors _____
 10. Public relations awareness _____
- Total..... _____