



# **BEEKEEPING Level - II**

## **Identify Honey Bee Flora**

# Learning Guide #3

Unit of Competence:

**Identify Honey Bee Flora**

**Module Title:**

**Identifying Honey Bee Flora**

**LG Code:**

**AGR BKG2M 05 LOLG3**

**TTLM Code:**

**AGR BKG2 TTLM 0819v1**

**LO 3: Complete recognition of honey bee flora**

This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics –

- *Documenting* Information about honey bee flora
- Recognizing as new honey bee flora and updated reference of collection
- Disposing any plant debris according to enterprise guidelines.

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, **you will be able to**

- *Document* Information about honey bee flora
- Recognize as new honey bee flora and updated reference of collection
- Dispose any plant debris according to enterprise guidelines

#### **Learning Instructions:**

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number 3 to 20.
3. Read the information written in the “Information Sheets 1”. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
4. Accomplish the “Self-check 1” **in page -**.
5. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-check 1).
6. If you earned a satisfactory evaluation proceed to “Information Sheet 2”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity #1.
7. Submit your accomplished Self-check. This will form part of your training portfolio.

<b>Information Sheet-1</b>	<i>Documenting</i> Information about honey bee flora
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**Documentation May include,**

- A written description of the plant species including common and botanical names
  - Visible characteristics
  - Details of occurrence or origin
  - Optimum growth requirements and/or a herbarium of plant samples preserved according to the requirements of the enterprise or industry sector
- May include, but not limited to:

**Types and sources of information**

- Variable written and graphical instructions,
- Work bulletins,
- Data sheet,
- Diagrams or sketches
- Occupational health and safety manual
- Industry/workplace codes of practice
- Organization operating procedures
- Safety work procedures/manual and material safety data sheets
- Workplace guidelines/ workshop manuals
- Manufacturer’s diagrams, charts
- Manufacturer’s catalogue/specification manual.
- Manufacturer’s service and operation manuals
- Design specification manual
- Repair request documentation ,job cards,
- Manufacturing and designing specifications and instructions
- Records and reports
- Virtual library(electronic media)

Documentation will:

- Prove that programs are effective and being completed as written;
- Demonstrate due diligence;
- Meet requirements for third party customer assessments/audits;
- Meet regulatory requirements; and
- Establish a paper trail to improve the current food safety program.

A facility may already have programs or activities in place. Processors should document and keep records of these programs. These can be used to prove that safety actions are taking place. To develop a documentation system, it’s important to break it into stages or levels. Each level expands to create a complete program and compares to one step in the development process.

**Level 4:** Records = Where is it recorded?

**Level 3:** Procedures = How is it done? How Level often what situations? When?

**Level 2:** Designate Responsibility = Who is responsible for the task?

**Level 1:** Policy Development = Provides a definition for approach and scope.

## DOCUMENTS AND RECORDS

It is important to understand the difference between a document and a record.

Documents	Records
<ul style="list-style-type: none"><li>• <i>Permanent</i></li><li>• <i>Describe facility policies and work instructions (Level 1, 2, and 3)</i></li><li>• <i>Define systems, processes and procedures</i></li></ul>	<ul style="list-style-type: none"><li>• <i>Filled in as activity occurs (Level 4)</i></li><li>• <i>Provide proof that policies were followed or activities performed</i></li><li>• <i>Demonstrate processes and procedures are being conducted as required</i></li></ul>

Document and record all processes and activities. These documents and records should be stored in official files and remain accessible to staff who need them. Base the documents on the prerequisite programs and on the product protection or HACCP plan. If documents are already being kept, review them to make sure they are complete and that they follow the necessary standards.

Follow these three general principles to develop records and documents:

1. Keep it short and simple. Use bullet points and flow diagrams instead of long sentences and lengthy paragraphs.
2. Clarity is important. Step-by-step instructions are easily understood.
3. Use a standardized, consistent format. Although different programs may need different documents and records, using a similar approach will help staff learn quickly.

## DOCUMENTATION SYSTEM FORMATS

There is more than one correct format for a documentation system, but it must include all necessary information and be easy to read and understand.

### Description of Activities and Qualifiers

**Who:** Identifies the person or position responsible for carrying out the activities.

**What/How:** Describes what is done and provides instruction (monitoring procedures) on how it's done. Includes:

- Duties and how they are completed;
- Acceptable and unacceptable standards/limits (if applicable);
- Records to be completed and how they are completed; and
- References to other bullet points and/or manuals.

**When:** Describes how often (frequency) the monitoring procedure

is done.

**Records:** Describes what records are kept and where they are located.

**Deviation and Corrective Action Procedures:** In the event that a deviation from normal occurs (e.g. outside of the acceptable limits), the corrective action procedure describes the actions to be taken to correct the deviation. It includes who, what, how and a record description.

**Verification Procedures:** Verification procedures ensure that the monitoring procedures have been performed correctly. This involves a different person/position than the who in the monitoring procedure. Verification procedures also include who, what, how and a record description.

<b>Self-Check 1</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. write types and sources of information 5pts
2. Write the difference between record and documentation 5pts
3. write three general principles to develop records and documents 5pts

**Note: Satisfactory rating - 15points                      Unsatisfactory - below 15points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Short Answer Questions**

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## Information Sheet-2

Recognizing as new honey bee flora and updated reference of collection

### Identify Season of honey bee flora

Floral calendar is an important tool for beekeeper, it indicates various information of an area. This information is an important tool to plan beekeeping activity. It indicates the beekeeper the date, time and period of flowering in an area. Through experience beekeeper knows the major flowering periods of his area. Charts are published from many parts of the world. The floral calendar is an useful tool to the apiculture extension worker. Beekeeping depends much on floral calendar of an area. It is also useful if one has to take up migratory beekeeping.

The following steps are undertaken to design a floral calendar:

1. Survey to be taken up in the area and to make a list of plants and also to observe the flowering density.
2. Estimate food shortage increase/decrease in weight by weighing the hive periodically.
3. List the plant species visited by bees within its foraging range (mellifera-1 Km).
4. Identify the plants as pollen /nectar yielder.
5. Study the frequency of bee visit to plants. If there is no increase or decrease in weight , it is useful only in maintaining the colony. If there is increase in colony weight, the plant species is major source, useful in production.
6. Carefully record all the changes in flowering of plants visited, by bees.

After these steps it should be carefully studied in terms of colony performance and chart can be prepared for the area, where the study was conducted.

### Assessment of areas for beekeeping

Productive beekeeping depends on good colony management and good beekeeping areas, and in order to promote it as a profitable agricultural occupation, areas with a good potential for beekeeping must be located and evaluated. Asia is rich in places inhabited by feral swarms of native honeybees, and this fact often inspires premature judgements to the effect that beekeeping can be promoted almost anywhere in the continent where native bees are found. The truth, however, is those most feral colonies of Asian honeybees adopt a migratory strategy, moving with the seasons and the availability of forage. Thus, the temporary presence of a few feral swarms of honeybees here and there, for short periods, does not necessarily indicate that there is enough forage in the area to support year-round commercial beekeeping.



As in the assembling of floral calendars, weighing the hive is one of the most accurate ways of assessing the suitability and supporting capacity of an area. One major problem in this respect is how to select sites for assessment. The following guidelines for the exploration and evaluation of potential beekeeping areas may be found useful:

1. Referring to lists of known major honey plants in other countries or regions with similar vegetation patterns, agro-ecosystems, climate and edaphic conditions, determine whether similar plants are to be found in the area under study.
2. The seasonal occurrence, in unusually high numbers, of feral nests of native honeybees can often indicate that there is ample forage in the area, at least during the period in question.
3. The mere presence of flowering trees and shrubs in limited numbers, or of a few hectares of land covered with good honey plants preferred by bees, does not necessarily indicate that the area has potential for commercial beekeeping.
4. Practical, large-scale beekeeping operations call for large areas, usually hundreds or thousands of hectares of nearby land bearing good forage with high population densities. Good honey plants are characterized by relatively long blossoming periods, generally in terms of several weeks or months; high density of nectar-secreting flowers per plant or unit area; good nectar quality with high sugar concentrations; and good accessibility of the nectaries to the bees. The foraging land should be well proportioned, in terms of length and width, so as to promote foraging efficiency.
5. The supporting capacity of an area for honey production is best determined by monitoring weight changes in the bee colonies. Among other factors that affect the economic value of an area for beekeeping are average hive yields, prevailing honey prices in the area, as well as costs of colony-management inputs.
6. The fact that a flower is brightly coloured or that it has a strong scent does not always indicate that it is good for bees, unless the fact is confirmed by the criteria set out above.
7. The large-scale planting of honeybee forages has never been proved to be a profitable approach in terms of net economic return, except in integration with other agricultural activities, such as reforestation, roadside plantings, animal pasture, etc

<b>Self-Check 2</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write steps are undertaken to design a floral calendar 5pts
2. Write guidelines for the exploration and evaluation of potential beekeeping areas 5pts

**Note: Satisfactory rating - 10points**

**Unsatisfactory - below 10points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = \_\_\_\_\_

Rating: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Short Answer Questions**

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### Information Sheet-3

Disposing any plant debris according to enterprise guidelines.

## Handling and Disposal of Production Inputs

### Target Outcomes

**Beekeepers prevent the degradation and contamination of production inputs by safe and secure storage and disposal.**

### Description

**Production inputs** include **consumable** products such as

- feed (carbohydrate and protein supplements and substitutes);
- water;
- treatment products (pest control products, including pharmaceuticals, acid treatments, and essential oils);
- Cleaning and disinfection supplies. (Refer to Appendix F for information on using and handling disinfectants.)

### The Risks

Biosecurity risks associated with improper handling and disposal of production inputs include the following:

**Spread of pests** within the operation or to other beekeepers' operations through exposure of healthy bees to contaminated feed and/or water or beeswax foundation derived from contaminated hives: Contaminated pollen and honey stores contained within the hive can be of particular risk for spreading disease from area to area when moving colonies for pollination.

**Reduced efficacy of treatments:** Treatment products may be degraded or become toxic to bees if they are not stored according to label instructions (e.g. light-, temperature-, or humidity-controlled storage), are reused, or are used after the expiry date.

**Potential for treatment-resistance development** may occur if, for example, acaricide strips are not removed promptly at the conclusion of the treatment period or are reused.

## **Producer Benefits**

The benefits of implementing biosecurity-recommended practices when handling and disposing of production inputs are

- Reduced chance of introducing pathogens to healthy bees and therefore reduced need for increased monitoring, management, and treatments of exposed bees.
- Optimal treatment efficacy.
- Reduced chance of developing resistance to treatment products.
- Less need for destruction of supplies by minimizing exposure to contaminants.
- Improved reputation as a reliable supplier of bee production inputs – a benefit if selling beekeeping supplies.
- Less need for buying new feed to replace spoiled feed.
- Less need for buying new treatments to replace spoiled treatments.

## **Recommended Practices**

Personal sanitation practices are followed after handling confirmed or suspected production inputs that have been contaminated with bee pests.

### **1. Handling and Disposing of Feed and Water**

- a. Use unexposed (e.g. hive-top) feeders and clean up honey spills and syrup as soon as possible.
- b. Provide an alternate water source if necessary, limit bees from seeking water where they may co-mix with others, or be a nuisance to the neighbours.
- c. Feeders and water containers should be sealable and of a smooth material (e.g. food-grade containers) that can be thoroughly cleaned to remove wax, propolis and honey residue and disinfected before reuse. Rinse with clean, potable water before refilling. Use floats on the water so the bees won't drown and change water weekly.
- d. Store liquid feed in sealed containers. Pollen patties should be stored in a cool, dry area or frozen. Store all feed in areas segregated from bees, honey processing and other storage facilities.
- e. If a food or water source is found to have been accessed by infected or infested bees, or if the health status of bees accessing the food or water source is unknown, the feed and water should be removed (if feasible), sealed and disposed of safely.
- f. If moving hives ensure that the feed and pollen stores are not carrying diseases that are new or uncommon in the area being moved to.
- g. Avoid disposing of excess, uncontaminated sugar syrup by dumping on the ground as it can attract robber bees and pests.

- h. Excess pollen patties should be removed before placing honey supers on the colony and used patties should be buried or burned and not exposed to bees.
- i. Avoid the buildup of dead bees and other insects in or around feeders.
- j. Clean dead bees or other insects from feeders.

## **2. Handling and Disposing of Treatment Products**

- a. If applicable, store pharmaceuticals and chemical treatments according to label instructions (temperature, humidity, and light controlled).
- b. Keep products in their original unopened package until ready for use.
- c. Use a **first in/first out** inventory management system for supplies; that is, older inventory is used before newly acquired inventory.
- d. Promptly dispose of used, expired, or excess products that will not be used, according to the label instructions or further recommendations. Contact your provincial apiarist or apiculture specialist for current disposal recommendations.
- e. Mark hives with the number of acaricide strips applied to control mites and the date they should be removed. Count and record the number of strips to ensure that all strips are removed at the conclusion of the treatment period.
- f. Avoid re-using acaricide strips.
- g. Follow label instructions when applying treatments, especially if exposed to direct sunlight or high heat to prevent degradation of the treatment.

### **Record Keeping**

Records should be kept on

- 1. feeding dates, feed type, lot number, quantity, and supplier.
- 2. treatments applied, product lot numbers, and dates for application and removal (if applicable).
- 3. apiary and or hive placement identifier (i.e. where the product was used)

<b>Self-Check 3</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. **Write** benefits of implementing biosecurity 5pts
2. How can Handling and Disposing of Feed and Water 20pts

**Note: Satisfactory rating - 25points**

**Unsatisfactory - below 25points**

You can ask you teacher for the copy of the correct answers.

**Answer Sheet**

Score = _____ Rating: _____
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Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Short Answer Questions**

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## Reference

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