



BEEKEEPING Level - II

Identify Honey Bee Flora

Learning Guide #2

Unit of Competence: Identify Honey Bee Flora

Module Title: Identifying Honey Bee Flora

LG Code: AGR BKG2M 05 L02LG2

TTLM Code: AGR BKG2 TTLM 0919v1

LO 2: Recognizing specified honey bee flora

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

- Specify honey bee flora according to their *identifiable characteristics*.
- Brief descriptions of plant habits, characteristics and significant features are record
- taking advice of supervisors if necessary and where appropriate in the recognition activity

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**

- Specify honey bee flora according to their *identifiable characteristics*.
- Brief descriptions of plant habits, characteristics and significant features are record
- takes advice of supervisors if necessary and where appropriate in the recognition activity

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”
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.

Information Sheet-1	Specifying honey bee flora according to their <i>identifiable characteristics</i>
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Specifying honey bee flora according to their *identifiable characteristics*

Identifiable characteristics

Plant characteristics may include:

- The shape
- Size colour
- Texture
- Presence of hairs and spikes on leaves
- Stem
- Fruit
- Flower
- pollen and nectar

Common names will be used in recognition of honey bee flora. However, in some situations botanical names may be required. In Indigenous communities, language names can be used in lieu of common

Important Honeybee Plants of Ethiopia

✓ Table

Botanical name	Common name	Propagation	Apicultural use
Opuntia ficus indica	Beles	Cutting	Major honeybee flora
Becium grandiflorum	Mewatis, Tebeb (Tig)	Cutting, seed	Major
Acacia nilotica	Girar	Seed	Pollen source
Euclea shimperi	Dedeho	Seed	Nectar source
Parkinsonia aculeata		Seed, seedling	Good honeybee flora for arid areas
Eucalyptus camadulensis	Key bahirzaf	Seedling	Major
Hypoestes	Girbiya (Tig.)	Seedling	Major
Vicia dasycarpa	Gaya	Seed	Nectar source
Vernonia amygdalina	Grawa	Seed	Major
Guizotia scabra	Mechi	Seed	Nectar and pollen source
Maytenus ovatus	Atat	Seed	Nectar, pollen, Propolis
Sesbania sesban	Sesbania	Seed, seedling	Nectar, pollen
Cordia africana	Wanza	Seed	Nectar, pollen
Rhus vulgaris	Yeregnakollo	Seed	Nectar, pollen
Euphorbia candelabrum	Qulqual	Cutting	Nectar, Pollen
Agave sisalana	Qacha	Seedling	Nectar, Pollen

Euphorbia tiruciae	Kinchib	Cutting	Nectar, Pollen
Lepidium sativum	Feto	Seed	Nectar, Pollen
Schinus molle	Kundeberbere	Seed, seedling	Nectar

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

1. Write characteristics Plant
2. Categories plant based on nectar and pollen

Note: Satisfactory rating - 2points Unsatisfactory - below 2points
You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

1. _____

2. _____

Information Sheet-2	Brief descriptions of plant habits, characteristics and significant features are record
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Brief descriptions of plant habits, and characteristics

Toxic plants

Toxic plants are plants whose pollen, nectar, honey dew is toxic to honey bees and those honey from their nectar is toxic to human being As there are a number of important plant species for honey, bees there are some or relatively low poisonous and killer plants on this plants. There are Diagnostic keys to disease type called nectar poisoning, pollen poisoning and honey dew poisoning although these were separate effects each with a single cause.

Plants can kill bees by mechanical action too. There are some plant species that trap bees with glue webs watery pits or closing flowers some of these plants are very common in our country.

Eg Arabis glabra /tower mustard/, macadamia integrifolia, cuscuta species /dodder/ one of its species datura stramonium /datur jimson weeds /, justice schimperana / wild / etc.

Identification of plants, which benefit Honeybees

Ethiopia is potentially rich with diversity of plant habitat some of the honey plants are dominant in highland & others in lowland areas there are also cultivated crops forage plants horticultural plants in different areas which provide ample nectar and pollen for foraging honey bees.

Forage evaluation

The bee flora is classified as major and minor source based on the production of the resources & collection of these

A. POLLEN YIELDERS

Some plants provide pollen to the bees said to be pollen yielder these can be classified as major & minor source based on the forage attendance over a period of time e.g. stereopermum kun thianum prunus persica Hagenia abyssinica) minor source (Eucalyptus citriodora)

I. NECTAR YIELDER

Some plants provide nectar to honey bees said to be nectar yielder they can be classified as major & minor based on the amount of nectar the concentration of sugar in the nectar.

Major nectar source are plants much visited by the bees throughout their flowering period eg Banalities aegyptiaca, Adansonia digitata, Guizota species trifolium species, Bidens species, varnonia species, some Acacia species Eucalyptus species etc

Minor nectar source –are plants visited by the bees less often or only when flowers of major nectar source plants are not available or flowers which do not meet the demand of bees visited under extra ordinary condition eg Acacia pollen acanthi solanum species

II. POLLEN AND NECTAR YLELOER

Are plants provide both nectar and pollen to bees the plants may provide abundant nectar and some pollen OR they may provide abundant less pollen and nectar producing plants of high land & low land areas the area can be assessed as useful zones for promoting Beekeeping activity as a profitable agricultural occupation

Highland – egHygeniaabyssinica (kosoltrifoleum species Guizzota species schefflera

Species (Getema) Bidens species rage seed coffee arabicaAypoestes species are

Dominant nectar sources

Lowland – eg prosodies Acacia species Euphorbia species parakisonia

N o	Plant species	Common (local)	Flowering period	sour ce	
1	Mangifera indica	Mango (Eng.Amh&ora	Dec-mar	A+	A +
2	Rhusglutinosa	Tatesa (or)	Oct-janu	A+	A.
3	Schinusmolle	Tikur-berberie (Amh)	Jan-Dec	A+	A
4	Polysciasfulva	Yegenjerowenber(Amh) talao(or)	Non -Apr	A+	A +
5	Schifleabyssica	Geteme (Amh) marfatu(oro)	Mar-may	A+	A +
6	Veronicas amygdaline	Grawa(Amh) Ebicha (oro)	Jan-Feb	A	A.
7	Jacarand mimosifolia	Yetemenjazaf(Amh)--	Non-may	N	A
8	Stereospermumkunthi anum	Zana (Amh) Botoro(oro)	Sep-may	A+	A +
9	Adansoniadigitata	Bambo (Amh)-----	May-july	N	A +
10	Cordiaafricana	Nanga /waddesa(oro)	Oct-may	A+	A
11	Buddlejapolystachya	Atikuar(Amh)cheilor	Non-may	A	A

1					
1	Boswelliapapyrifera	Yeitan-zaf(Amh)kafal(oro)	Oct-mar	A+	A
2					
1	Opantiaficus-indica	Kwkual -----	Janu-Dec	A+	A
3					+
1	Combretummolle	Didessa (oro)	Janui-Aprit	A+	A
4					+
1	Euphorbia abyssinica	Kulkual (tulu)	Sep-Nou	A	A
5					
2	Syzygiumguineese	dokina	Janu- March	A+	A
9					+
1	Corotonmacrostachys	avocado	APR-lul	A	A
6					
1	Dovalisabyssinica	Koshm(Ankakutch) oro	Oct -Feb	A	A
7					
1	Perseaamericana	avocado	Oct-Dec	A	A
8					
1	Acacia species	Girar	Varies from species to species	A	A
9					
2	Albizespecies	Sisa /mukarbe	"	A	A
0					
2	Erythriusabyssinica	Kore(Amh) walensu(oro)	Sep-April	A	A
1					
2	Azadirachtaindica	Neem tree	Oct-march	A	A
2					
2	Ekebergiacapensis	Lol(Amh) walensu(oro)	Nov-may	A	A
3					

2 4	Ficusvasta----	Warka (Amh) –kiuta (oro)	Oct-Dec	A	A
2 5	Ficussur	Shoal(Amh)arbu (0r0)	Oct-Dec	A	A
2 6	Eculyptasspecies	Bar-zar	March-Apri	A	A
2 7	Masaxparadisiaca	Muz(Amh)&oro) bakana	Januy-Dec	A	A
2 8	Psidiumguajava	dokima	Janu-Dec	A	A
3 0	Dleaspecies	Weyira /Ejersa	April tojane(vari es)	A	A
3 1	Coriandrumsativum	DimbcAl(Amh)	Jan-Dec	A	A
3 2	trachyspernumamini	NechAz mud(Amh)	Oc-Dec	A	A
3 3	Carissa edulis	Agam(Amh)Agamsa(oro)	Jan-Dec	A	A
3 4	Bidensspecies	AdeyAbeba(Amh)keloAba re(oro)	Sep-oct	A	A
3 5	Carthamustincorius	Sunflower suf	Nov-Feb	A	A
3 6	Guizotiaspecies	NvgHada,tufo	Aug-Feb	A	A
3 7	Brassica napus	oilseed	Sep-Nov	A	A
3 8	Brassica nigra	Senafch-----	Sep-Aprl	A	A

3 9	Lapidiumsativum	Feto(Amhxoro)	Oct-Nov	A	A
4 0	Chat edulis	Chat (Amh) jima(oro)	Sep-Dec	A	A
4 1	Cobretuspaniculatus	Begi(e) (oro)	Sep-Dec	A	A
4 2	Cucurbitapepo	Duba (Amh)-----	Apr-Dec	A	A
4 3	Ocimumlamiifolium	Damakasio (Amh)	Apr-Dec	A	A
4 4	Ocimumurticifolium	Besobla[amh.]	Jan- Dec	A	A
4 5	Salvianilotica	Besobila[Amh.]	Sept-Dec.	A	A
4 6	Saturejparadosca	Naddo(Amh) tenadam(oro)	Sep-Dec	A	A
4 7	Thymus schimperi	shimbra	Jan-Dec	A	A
4 8	Ciceraritinum(Chikpea)	Shimbra	Oct --Feb	A	A
4 9	Trifoliumspecies	Megat,Wazma(Amh.) ,Sidisa(Orom.)	variable	A	A
5 0	Vaciafaba	Bakela	Sep-oct.	A	A
5 1	Vaciadassyycarpa	Vech	Apr-Dec.	A	A
5 2	Forage Legumes	Different	Sep.-Dec	-	-

5 3	Linumustatissimum	Telba(Amh.)	Oct-Nov	A	A
5 4	SolaniumTuberosum	Dnich(Amh.)	-	A	-

Key A: available N: not available.

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

1. What is toxic Plants? 5pts
2. identify plants which benefit to bees 8pts
3. write for each plants flowering periods 7pts

Note: Satisfactory rating - 20points Unsatisfactory - below 20points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Short Answer Questions

1. _____

2. _____

3. _____

Information Sheet-3	taking advice of supervisors if necessary and where appropriate in the recognition activity
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General procedures

The following procedures shall be followed for all beekeeping activities:

Placement of beehives

- OVPCPF must approve the placement of beehives on all IU property in advance. Groups that wish to place a hive should submit a [Request for Service](#) to OVPCPF.
- OVPCPF will consider each request on a case-by-case basis and will utilize general guidelines of at least 100 feet from common travel areas and at least 1,000 feet from daycare facilities, playgrounds, and areas that experience dense human traffic (stadiums, auditoriums, etc.). OVPCPF may choose to ignore or alter these guidelines at its discretion based on individual situations.
- Rooftop hives will not be permitted without the express consent of OVPCPF and IUEHS for the respective campus.

Signage and barriers

- Signage shall be posted to indicate that a designated area is used for beekeeping activities: “CAUTION: ACTIVE BEE HIVE: DO NOT DISTURB”.
- Perimeter protection may or may not be needed and will be decided by OVPCPF and INLOCC.
- All persons participating in beekeeping activities shall complete the INLOCC liability waiver.

General guidance

- Any person with suspected or known allergies to bee venom must seek medical advice from their primary care physician prior to participating in beekeeping activities.
- Any person with suspected or known allergies to bee venom must notify the head beekeeper.
- Proper lifting techniques shall be used when lifting boxes. Medium boxes can weigh around 30-50 pounds when filled with honey.
- A telephone must be on site any time participants are present.
- Be aware that bees are sensitive to dark colors and odors such as perfume, dogs, and diesel. These things may affect their behavior.
- Note that commercial sale or use of honey or other edible hive products may be subject to state and federal regulation. Contact IUEHS for your respective campus for further information if you intend to package or provide honey products to the public.

- While transport of bees into Indiana is not regulated, transport to other states may be. State requirements are available by contacting the State Apiarist for the state into which you are transporting.

Equipment

- Maintain a fire extinguisher within 50 feet of the area where the smoker will be used. Information about fire extinguisher training may be found at the [INLOCC](#)
- Only dry fuel (e.g. newspaper, pine needles, bark) shall be used while lighting the smoker. Add a small amount of dry fuel, draw a gentle fire, and pack in more dry fuel.
- When the smoker is not in use, place the smoker in a space free of combustible material (e.g. a metal bucket).
- Keep the area around the hive free of combustible materials.
- To avoid burns and irritation of eyes, the hot barrel of the smoker should point away from the operator.
- The smoker should be extinguished after each use.

Personal Protective Equipment (PPE)

Personnel participating in beekeeping activities should, at a minimum, wear a beekeeping hat and veil, elbow length gloves that are leather or nitrile, and closed-toe/closed-heel shoes.

Before entering the beekeeping area, personnel shall wear clean protective clothing/personal protective equipment. The protective clothing should be without holes to prevent bees from entry.

Beekeeping hat and veil

- The ventilated hat should keep its shape and be firm enough to support the veils that fit over them and provide space that keeps the veil away from the face.
- Veils are required when working closely with the bees. A folding wire veil should be fitted to the hat to ensure good separation between the beekeeper's face and the bees outside the veil.
- Dark felt hats and floppy hats should be avoided.

Beekeeping gloves

- Gloves need to be strong, but pliable;
- Elbow length cloth sleeves attached to the gloves should be worn when gaining access to the inside of the hive; or
- A band of elastic should be sewn into the cloth sleeve at the elbow end to make it bee-resistant.

Footwear

- Closed-toe and closed-heel shoes should be worn.

Bee sting first aid

- Reactions to bee stings

- Normal reaction includes: some pain, redness, itching, and swelling at the site
- Mild to moderate reaction includes: persistent or spreading pain, itching or swelling, large or uncomfortable areas of pain, redness, itching or swelling, ongoing symptoms over several days.
- Severe (Anaphylactic) reaction includes: Abdominal pain or vomiting, difficult or noisy breathing, swelling of the tongue, swelling or tightness of the throat, wheezing or persistent cough, difficulty talking or swallowing and/or hoarse voice, persistent dizziness or collapse.

What to do if you are stung

- Remove yourself from the vicinity of the hive.
- Remove the stinger by scraping the sting as soon as possible. Personnel shall not delay the removal of the sting, regardless of the method used to remove it, as it increases the amount of venom injected into the body.
- Oral antihistamines may assist with persistent itching.
- If you have an adrenaline auto-injector, such as an EpiPen, you should locate it in case your symptoms worsen or call 911.
- Be aware that antihistamines will not prevent or treat anaphylaxis, the most severe form of allergy. The only pre-hospital treatment for anaphylaxis is adrenaline.

Reporting injuries and stings

- Employees must notify their supervisor and/or the head beekeeper immediately if an injury or illness occurs.
- If the person stung is an employee, within 24 hours, the supervisor (or designee) must fill out and submit an injury/illness form. More information regarding injury reporting can be found at [Indiana University Human Resources](#).
- If the person stung is a student or other non-employee, they or the head beekeeper should fill out the form provided by [INLOCC](#) within 24 hours.
- A [first aid kit](#) shall be on site and equipped with supplies to remove bee stings. Personnel should know and understand how to use the first aid kit in the event of a sting.
- IU Police Department for the respective campus shall immediately be contacted if an individual starts to experience a mild to severe reaction bee sting.

Training and recordkeeping

Training

- First aid training should be completed by the head beekeepers.
- Fire extinguisher training should be completed by anyone who may be expected to use a fire extinguisher. Training is required annually.

Recordkeeping

- The department or organization sponsoring the beekeeping shall retain completed liability release forms for all participants for at least three years after the last beekeeping activity by each individual.
- The department supplying the training shall maintain training documentation

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

1. *Write Personal Protective Equipment (PPE)* 10pts

2. write general procedure and guidance in beekeeping 10pts

Note: Satisfactory rating - 20points Unsatisfactory - below 20points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

1. _____

2 _____

Reference

1. advanced beekeeping manual
Ethiopian beekeepers association
2. a practical manual of beekeeping
how to keep bees and develop your full potential as an apiarist