



**BEEKEEPING: Level-I**

# **Learning Guide-01**

**Unit of Competence: Support**

Beekeeping Work

**Module Title: Supporting Beekeeping  
Work**

**LG Code: AGR BKGI M12LO1-LG-12**

**TTLM Code: AGR BKGI M12sTTLM  
0919v1**

**LO: Identify basic bee colony  
management**



<b>Instruction Sheet</b>	<b>Learning Guide #12</b>
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This learning guide is developed to provide you the necessary information regarding the following content coverage and topics-

- Identifying the required *Material and equipment* for transferring and transferring season.
- Explaining are Transferring procedures of bee colony to modern /transitional hive.
- Explaining and Follow up after transferring bee colony.

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 –

- Identify the required *Material and equipment* for transferring and transferring season.
- Explain are Transferring procedures of bee colony to modern /transitional hive.
- Explain and Follow up after transferring bee colony.

### **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 14.
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.



8. Read the information written in the “Information Sheet 2”. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
9. Accomplish the “Self-check 2” in page 16.
10. 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 2).
11. Read the information written in the “Information Sheets 3 . Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
12. Accomplish the “Self-check 3” in page 19.
13. 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 3).
14. If you earned a satisfactory evaluation proceed to “Operation Sheet 1” in page 21. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity #1.
15. Read the “Operation Sheet 1” and try to understand the procedures discussed.
16. If you earned a satisfactory evaluation proceed to “Operation Sheet 2” in page 23. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity #1.
17. Read the “Operation Sheet 2” and try to understand the procedures discussed.
18. If you earned a satisfactory evaluation proceed to “Operation Sheet 2” in page 23. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity #1.
19. Read the “Operation Sheet 3” and try to understand the procedures discussed.
20. Do the “LAP test” in page 24 (if you are ready). Request your teacher to evaluate your performance and outputs. Your teacher will give you feedback and the evaluation will be either satisfactory or unsatisfactory. If unsatisfactory, your teacher shall advice you on additional work.



<b>Information Sheet-1</b>	Identifies the required <b>Material and equipment</b> for transfer and transferring season
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### 1.1 Prepare materials, tools and equipment for beekeeping work

#### Bee keeping Equipment and their uses

Bee keeping equipment is material used (necessarily important) for bee keeping and also honey production.

Some of the most important bee keeping equipments are: -

1. **Beehive:** - Successful beekeeping means easy manipulation of the frames of brood and honey to provide a surplus of honey beyond that which the bees need to live on and rear their replacements. It is this surplus of honey which the beekeeper removes and marketed for his product. There are three different types" beehives.

2. **Frame wire-** it is used to support the honey comb in the frame

3. **Casting mould-** it is a metal caused with zinc. It is manually operated and used to make artificial comb foundation sheet.

4. **Transformer** -it is of 18-24 volts, it can reduce the 220v down to 18-24v.

This transformer is used for fixing comb foundation sheets on the frame wires but it is not used in areas where electrification is lacking particularly in most places of rural Ethiopia.

5. **Embedded knives-** is used as an alternative or hot iron bar to do the same purpose (as of transformer)

6. **Honey extractor (Centrifugal)-** it can be hand drive or electrically operated

7. **Honey presser-** it is used to extract honey be methods of hand pressing of the honey combs which are not framed

E.g. honeycomb harvested from traditional and Transitional hives.

8. **Uncapping fork** it is operated manually

This device is mainly used to decamp the cells, of ripened honey before the framed honey combs are placed in the extractor.

9. **Uncapping knife** - is also used for the same purpose, but it is electrically operated.

10. **Queen excluder** (Separating careen)

- Advisee used to form an appropriate partition between he brood and honey chambers so as to prevent the queen bee and drones from interning in to the honey super.

There are three types of queen excluder based on the materials they are made of.

I. Hard metal



II. Metal sheet Queen excluder

III. Plastic

**11. Honey storage tank** -This is made of stainless steel with a very tight lid, it has a tap

There are at least two types of them-

- The one, which has, get calamity of 50 kg and 30 kg.

**12. Honey jars** (glass or plastic)

- Each contains 500 gm. According to need

**13. Chisel** (bee keeper's tool)

- it is made up of iron metal and has sharp surface on one end.

- It is a hand tool of a beekeeper. One has to use or have in his/her hand before appetizing bee hives.

- It is used to open the hive, clean porpoise and other up necessary materials seen in the hive. It can be made locally.

**14. Bee brush**- a soft bristled used to remove bee from a frame combs. (to draw bees into the hive)

**15. Smoker**- it is manually exported

- It sub dues the bees and induces them to feed (engorge), Bees full of honey or other feeds are much easier to handle being

- Aggression is at a minimum while the colonies are disrupted in response to smoke.

- It is also believed that the smoke deadens the effect of alarm pheromones produced during the disturbance caused by evening up the hive.

**16. Hand glove**

**17. Bee Veil Bee keepers protective clothes**

**18. Over all (bee suits)**

**19. Boots sheets.**



## **20. Water Sprayer**

Used to spray water on bees (especially at lowland areas like Gambela) to reduce-

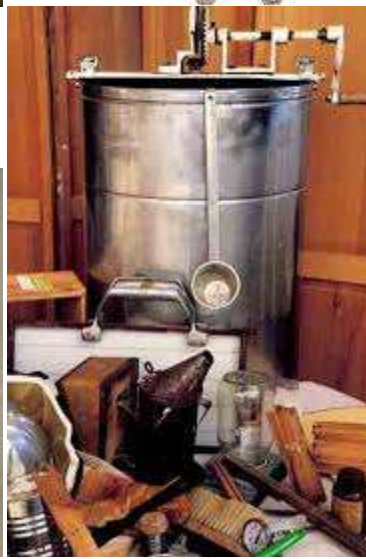
- Aggressiveness Immediate evacuation from their nest.

## **21. Honey weighing scale**

- It is used for weighing honey harvested
- It is used also to keep production records of honey obtained from a hive and/or from an apiary

## **22. Honey strainer.**

- It is a double course screen
- It is used in the normal processing of honey freshly extracted from the comb to remove the bits of wax that flow out of the extractor with honey.
- All honey as it comes from the extractor and before it goes into bottles (jars) should be run through a strainer to remove sediments and wax capping.









## **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

### **1.2.3 Check materials, tools and equipment for beekeeping work**

Containers and processing equipment need to be made of material compatible with this very acidic food. No copper, iron, steel or zinc should be used as they dissolve into the honey and



may affect color and flavor, and might reach toxic levels. Instead, stainless steel, glass and food grade plastic can be recommended. Galvanized steel (zinc) may be used for surfaces which come into contact with honey only for short periods, such as in extractors. Used containers need to be free of any odours since honey will absorb these very quickly. Storage containers made of improper material can be coated completely with beeswax or food grade plastic liners to avoid any direct contact. There is, however, no adequate protection if the containers have been used previously for toxic chemicals

#### **1.2.4 Handling techniques of materials, tools and equipment for beekeeping work**

##### **Honey containers**

Improper honey containers also affect the quality of honey. So honey containers should be

- Odorless,
- There must not be exposed metals that makes to react with honey and brings a chemical changes,
- The containers has to be moisture proof,
- The shape of the containers must be proper for readily removable of a honey,
- The containers should have their own lid or cover,
- Recommended containers are - aluminum - stainless steel

- Plastics - glass.

Containers used for retailing have to be attractively labeled.

##### **1.2.5 Selecting and checking Personal Protective Equipment (PPE)**

Consists of the following items:

1. Veil: for covering head and face and giving protection from stings.
2. Overall: for covering the rest of the body
3. Gloves: for covering the hands
4. Boots: for covering the feet.

#### **1.6 Handling honey bees when opening a hive**

In cooler area, beekeepers who can choose when they open their hives should work on a warm, dry, windless, Sunday; when most of the older bees aren't inside the hive. In any case, Hives should not be opened during cold temperature, windy and rainy days when all the foragers are inside the hives. Bees are especially likely to sting when there is no nectar flow.



Colony conditions which makes the bees more difficult to handle included the following; a very large population, presence of many old bees, previously alerting of the colony by disturbances of any kind, robbing by bees from other colonies, queen less or super sedure, and starvation.

### 1.7 Possible transferring time

If the transferring place is away from the reach of people and animals, it is quite possible to do the transferring during day time starting from morning to late afternoon. If the operation of transferring is near resident areas or at backyard, the possible and safe operation time is after all animals, school children and other walking living things are under their respective shelters. It is not advisable to do transferring alone. Two or more people can do better jobs and safe.

<b>Self-Check -1</b>	<b>Written Test</b>
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**Directions:** write short answer

- 1, list honey bee transferring equipment(4point)
- 2, write use of .Water Sprayer(2points)
- 3, write use of Bee brush (2points)
- 4, when does batter honey bee colony transferring time?(3points)

**Note: Satisfactory rating – 4 points**

**Unsatisfactory - below 4 and 4 points**

### Answer Sheet

Score = _____
Rating: _____

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

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



<b>Information Sheet-2</b>	Explain Transferring procedures of bee colony to modern /transitional hive
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## 2.1 Bee packaging

It is a modern way of transporting bees from one place to another.

- Before an attempt to transport prepare final destination sites, boxes and hive stand.
- The bees after reaching the destination site, has to be transferred into box hives immediately.
- A swarm trapping and transporting box properly designed for the purpose is known as bee packaging box or nucleus hive.
- It has a separate feeder for the queen and worker bees during the journey. Such kind is an appropriate box for trapping and transporting bees to any distance across the country.
- But the queen has to be placed in a separate cage with ample food;
- Possible to transport as many colonies say 100 or 200 at a time.
- Better to drive at night to minimize heat stress
- Keep water and water sprayer with you.
- When relocating a hive over a long distance (more than 2 km), first of all plug up the entrance holes at night when all the foraging bees are in hive and make sure there is no other escape for the bees; transport it carefully to a well-shaded and protected place.
- When relocating a hive over a short distance (less than 2 km):
- If you simply move the hive directly to a place which is less than 2 km away from your original site, (that is 100 m or less), the “field bees” would return to the original place because of their sense of orientation. As a result you would lose them all. What you have to do is:
- First close the hive
- Take the hive to a place, which is 3 km away from both the old and the new proposed site.



- Leave it there for at least 2 weeks.
- Then transport it to the new site. During the 14 days at the temporary site the “field bees” will have forgotten the old site.
- If the hive is to be moved between 20 and 100 m you may also carry the hive to the new site straight away, but then you have to collect clusters of stray older bees at the original site repeatedly which are then shaken into the new hive.
- If you want to relocate your hive less than 20 m away, you can move it in steps of 2 m every third day until you have reached the new site.

## 2.2 Transferring bee colony from local hive into frame hive

Transferring bee colony from transitional /local hives to modern /moveable frame hive has the following stapes

- stape1.** Put the mat or flat material prepared on the transferring ground
- stape2.** Prepare the smoker with smoking materials inside and place near the edge of the mat
- stape3.** Put bee brush near by
- stape4.** Have water sprayer with water, good if you make it available
- stape5.** Bring the new nesting frame hive and place it on the mat having the size of 120 to 130 cm
- stape6.** Open the cover(lid) of the frame hive
- stape7.** The entrance of the frame hive should be towards the wider areas of the mat.
- stape8.** While bringing the old hived colony, do not roll or change the original position of the hive. Keep its position as it was until reaching the transferring place.
- stape9.** Hold local hive in the inclined position
- stape10.** Put the new nesting frame hive near and on operation mat.
- stape11.** The transferring has to be conducted with a steady and gentle manner of operation. This is mostly to avoid the magnitude of committing error in damaging the queen bee and minimizing jerking movement during removing combs from old nest.
- stape12.** The operation would start by opening the local hive lid.
- stape13.** Smoke around the edge of the hive soon after opening the lid. It helps to clear or move away the bees from working areas.
- stape14.** Whenever removing combs for the queen bee on both sides of the comb and place it where appropriate. The brood and the honey comb are to be placed separately



**stape15.** Use bee brush now just to clear the bees from the combs removed.

**stape16.** If the queen bee is discovered by chance soon after the operation started, then catch the queen bee and put her in a cage and place her in the new frame hive. Then continue the operation. However, this time on wards, there is nothing to worry about the mood of working, but

**stape17.** At any time of operation after the queen is caught place her in queen cage and then put her in the new nesting frame hive.

**stape18.** Cover the frame hive now after placing the queen bee in

**stape19.** During the operation if the queen bee is not discovered immediately, the work should continue but in a gentle manner until no comb is left in the old hive.

**stape20.** During the operation in cooperation with other people, fix brood combs removed from old nest on frames of frame hive with the appropriate head position of the removed combs correctly upward. Use rope and needle to tie brood combs on frame top bars accordingly

**stape21.** When everything from the local hive is removed, hold the local hive with both hands up and forcefully knock down on the mat so that all the bees inside the old hive would fall, then search for the queen bee carefully.

**stape22.** Make sure that no bees are left in the old local hive. Then take away the old local hive from the working site.

**stape23.** Allow the bees or indicate the direction of the hive entrance to run to where the queen bee is. Most of the time worker bees would search and reach her quickly.

**stape24.** There are rare incidences missing the queen bee during transferring. She may go with the swarm bees in to the new frame hive unseen or she may be out of the working areas resting on technicians' body or on tree branches or on other places. If its wings were clipped, it may fall down on the ground. If the queen bee is not in the new nesting hive, the worker bees are reluctant to join her going to the new hive. Even after the transferring has been successfully conducted, it is essential to check the remaining situation. So sometimes watch carefully to exploit the unexpected situations. It is possible to find two queens while transferring.

**stape25.** After completion of the transfer, place the new frame hive with the newly transferred bees in place of the old hive.

**stape26.** Finally clean working areas and materials that were used during the transfer.

## **2.3 Transferring of bee colony from local to transitional hives.**



In most cases, transferring method and material requirement indicated in frame hive colony transfer can be applied to transitional hive transferring method as well.

But in the case of transitional hive transferring, there is no need of making and fixing comb foundation sheets on bars as done for frame hive. There is also no need of inserting frame wire. However, preparations required before the transfer is as follows:

- a. Clean and assure the presence of all top bars required
- b. If beeswax is available, melt and smear on the inner middle surface of the top bar just to indicate the start of building the comb.
- c. Fix brood combs removed from the old local hive on the top bars of transitional hives
- d. Prepare transferring mat and other materials required as indicated in frame hive transfer method.

#### **2.4 Transferring procedure**

**Stape1.** Bring transitional hive first and place it on the mat

**stape2.** Next, bring the local hive with bees and place it near transitional hive but in the inclined position and then open the lid to start removing the combs.

**stape3.** Smoke on bees to avoid them from working sites.

**stape4.** When ever remove the combs, look for the queen bee on both sides of the comb.

**stape5.** Brush the worker bees down into the transitional hive from the top bar that is temporarily picked.

**stape6.** If the queen bee is found at the first operation that took place before removing all the combs from the local hive, then put her in a cage and place her in the base floor of the transitional hive. The work then after would be simple and quick. If not found quickly, continue removing the combs in a very careful and gentle manner until the queen bee is found. When she is seen while removing the combs, the lead person of the operation should take out off the hand glove and catch the queen bee with bare fingers. This is simply to safely handle the queen bee the most important individual of the colony. See picture 76.

**stape7.** If the queen bee is not found until the end of removing the combs from the local hive, knock down the local hive on mat after holding with two hands and this helps to remove all bees remaining inside. Search for the queen bee, catch and introduce her to the transitional hive after placing it temporarily in a cage.

**stae8.** Brood combs removed from local hive should be placed inside the new transitional hive by tying the combs with rope on top bars.

**stape9.** Place all the top bars in place. Direct the swarm bees to the new hive entrance (Fig 75).



**stape10.** When this operation is finished, look and investigate for unforeseen things around and then place the new transitional hive in a place where the former local hive was.

**stape11.** After the colony has settled well, try to check for the old combs introduced if not placed in order.

If there are old combs removed during the transferring time but not in use two important things to consider: Save these combs as they are by placing in a safe bag for later use that same day, or shortly after wards, melt and collect pure beeswax before it is attacked by wax-moth.

<b>Self-Check -2</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below.

**1, what is Bee packaging?(2points)**

**2, write stapes of colony transfer from local hive?(2points)**

**Note: Satisfactory rating – 4 points**

**Unsatisfactory - below 4 and 4 points**

**Answer Sheet**

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

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

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

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





<b>Information Sheet-3</b>	Explain and Follow up after transferred bee colony.
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### **3.1 Follow-up and support for settlement of colony transferred**

After the transfer is done, starting next day, inspection of conditions to working bees is an important task. The bees unless irritated with materials in the hive they will start resuming the normal nest activities quickly. Bees going out of the new hive and coming with pollen load is a good sign of settling. If the transferred colony did stay in the new hive with no sign of movement, and if no bee is going out or coming in, then there would be a danger rather have the intention to escape to unknown destination. Some beekeepers in such a case would provide them with more food. Instead, close watching is important.

#### **Indicator of bee settling**

- ❖ Clean new hive
- ❖ Foragers load pollen
- ❖ Start to built honey comb

Some bee colonies when they are disturbed after transfer, they mostly crawl around hive entrance. Therefore, smoke at them and drive them to go into the hive again.

If the bee colony starts cleaning the hive, this is a good indication also that the colony has settled in the new nesting hive. The bee colonies have the behavior to remove all unnecessary things from the nest quickly.

If one is sure that the bees have resumed nest activity, releasing the queen bee from the cage mostly after one to two days is good for her to be acquainted with the new environment inside the hive

All old combs removed from local hive and placed into the new nesting hive, whether it is in frame or transitional hives, should be removed after the bees have settled well and start constructing their own new combs.

Another and most important aspect of transferred colony settlement to new hive is that the start of queen bee laying eggs and larval development when seen in combs cell . On the other hand, in the presence of newly constructed comb if no eggs are laid and no larval development is seen, then, there is a danger of losing the queen bee at transfer time or then after.

Such colony can be called queen less colony.



As a coping mechanism worker bees lay several eggs of their own in one cell which is not done by queen bee. The queen bee would lay only one egg per comb cell at a time.

During such unfavorable situation, where the colony is without queen bee, instead of losing the entire colony the best option of surviving the colony is to insert or place brood comb with fresh uncapped larvae by bringing from other colony so that they can develop queen bee from the fresh larvae introduced. This has to be done before worker bees lay their own eggs.

At any time of the seasons, apiary inspection and application of best bee management practices is a rewarding job leading to sustainable end results.

Bee colony must be managed carefully during transferring such as

- Inspection and proper validation of bee management
- *Queen Excluders in Frame Beehives*
- *Feeding of bees during dry period*
- Splitting of colony
- Swarm control
- Absconding control
- Prevention of disease
- Pest and predator control etc
- **Apiary arrangement:** The arrangement of the apiary is important to help meet the needs of the bees and to help make beekeepers work easier. In most areas of the tropics it is necessary to put the hives on stands to protect the bees from ants and toads. The stands should be at least 45 cm above the ground. The legs can be placed in cans that contain used motor oil, or bands of grease can be placed around them to keep ants from the hives; fresh ashes spread around the legs also keep ants away. Since the KTBH consists of a single box, it can also be hung from a tree or from poles. This protects it from ants and toads and from bush fires as well.
- ***Keeping weeds cut in the apiary also reduce the ant problem. Tall weeds can provide bridges to the hives for the ants***
- If there is no source of water for the bees within one kilometer, a container of water with floating sticks or protruding stones can be placed in the apiary.
- Hive arrangement within the apiary is also an important consideration. Avoid placing the hives close together in long straight rows. Such placement results in a lot of drifting or confusion of bees between colonies. Drifting can contribute to disease transmission. To prevent drifting, the direction of the hive entrances can be varied, and lines of hives can be broken up with landmarks such as trees or shrubs. Hives



should be at least 45 cm apart, and slightly tilted toward the entrance to aid the colony in removing residue that falls to the bottom. This also allows rainwater to run out. The placement of hives should allow the beekeeper to approach the colony and work it from behind. This is less disturbing to the colony since it does not interfere with the flight path of the foragers. It also allows the beekeeper a chance to smoke the colony before the guard bees at the entrance are alerted.

- Hives should not be in direct sun light during the hot periods of the day, nor should they be in constant heavy shade. The ideal site would receive sun in the morning so that the bees start to fly early, and shade in the afternoon so that the number of bees ventilating the colony and foraging for water is minimized.
- The apiary site should also allow for good air circulation so that it does not remain damp for long periods after wet weather. Avoid areas that flood during rainy periods. Areas under high trees often provide good apiary sites because they dry out quickly afterwards and are not excessively shady.
- Avoid areas of constant wind for apiary sites. Such winds hinder the bees from flying. If there are no natural windbreaks, they can be planted. Melliferous plants can serve a double purpose. Such living fences can also serve to keep livestock away from the hives.

<b>Self-Check -3</b>	<b>Written Test</b>
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**Directions:** answer the questing appropriately

1, Write sings of colony settling (4point)

**Note: Satisfactory rating – 4 points**

**Unsatisfactory - below 4 and 4 points**

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

### Answer Sheet

Score = _____
Rating: _____

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

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





**N.B You must identify and collect tools and equipments first for all operations**

Operational sheet-1	Transferring bee colony from local hive into frame hive
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Transferring bee colony from transitional /local hives to modern /moveable frame hive has the following stapes

- stape1.** Put the mat or flat material prepared on the transferring ground
- stape2.** Prepare the smoker with smoking materials inside and place near the edge of the mat
- stape3.** Put bee brush near by
- stape4.** Have water sprayer with water, good if you make it available
- stape5.** Bring the new nesting frame hive and place it on the mat having the size of 120 to 130 cm
- stape6.** Open the cover(lid) of the frame hive
- stape7.** The entrance of the frame hive should be towards the wider areas of the mat.
- stape8.** While bringing the old hived colony, do not roll or change the original position of the hive. Keep its position as it was until reaching the transferring place.
- stape9.** Hold local hive in the inclined position
- stape10.** Put the new nesting frame hive near and on operation mat.
- stape11.** The transferring has to be conducted with a steady and gentle manner of operation. This is mostly to avoid the magnitude of committing error in damaging the queen bee and minimizing jerking movement during removing combs from old nest.
- stape12.** The operation would start by opening the local hive lid.
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- stape14.** Whenever removing combs for the queen bee on both sides of the comb and place it where appropriate. The brood and the honey comb are to be placed separately
- stape15.** Use bee brush now just to clear the bees from the combs removed.
- stape16.** If the queen bee is discovered by chance soon after the operation started, then catch the queen bee and put her in a cage and place her in the new frame hive. Then continue the operation. However, this time on wards, there is nothing to worry about the mood of working, but
- stape17.** At any time of operation after the queen is caught place her in queen cage and then put her in the new nesting frame hive.



**stape18.** Cover the frame hive now after placing the queen bee in

**stape19.** During the operation if the queen bee is not discovered immediately, the work should continue but in a gentle manner until no comb is left in the old hive.

**stape20.** During the operation in cooperation with other people, fix brood combs removed from old nest on frames of frame hive with the appropriate head position of the removed combs correctly upward. Use rope and needle to tie brood combs on frame top bars accordingly

**stape21.** When everything from the local hive is removed, hold the local hive with both hands up and forcefully knock down on the mat so that all the bees inside the old hive would fall, then search for the queen bee carefully.

**stape22.** Make sure that no bees are left in the old local hive. Then take away the old local hive from the working site.

**stape23.** Allow the bees or indicate the direction of the hive entrance to run to where the queen bee is. Most of the time worker bees would search and reach her quickly.

**stape24.** There are rare incidences missing the queen bee during transferring. She may go with the swarm bees in to the new frame hive unseen or she may be out of the working areas resting on technicians' body or on tree branches or on other places. If its wings were clipped, it may fall down on the ground. If the queen bee is not in the new nesting hive, the worker bees are reluctant to join her going to the new hive. Even after the transferring has been successfully conducted, it is essential to check the remaining situation. So sometimes watch carefully to exploit the unexpected situations. It is possible to find two queens while transferring.

**stape25.** After completion of the transfer, place the new frame hive with the newly transferred bees in place of the old hive.

**stape26.** Finally clean working areas and materials that were used during the transfer.

<b>Operational sheet-2</b>	<b>Transferring bee colony from local hive into transitional hive</b>
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**Stape1.** Bring transitional hive first and place it on the mat

**stape2.** Next, bring the local hive with bees and place it near transitional hive but in the inclined position and then open the lid to start removing the combs.

**stape3.** Smoke on bees to avoid them from working sites.

**stape4.** Whenever remove the combs, look for the queen bee on both sides of the comb.

**stape5.** Brush the worker bees down into the transitional hive from the top bar that is temporarily picked.

**stape6.** If the queen bee is found at the first operation that took place before removing all the combs from the local hive, then put her in a cage and place her in the base floor of the transitional hive. The work then after would be simple and quick. If not found quickly, continue removing the combs in a very careful and gentle manner until the queen bee is found. When she is seen while removing the combs, the lead person of the operation should take out off the hand glove and catch the queen bee with bare fingers. This is simply to safely handle the queen bee the most important individual of the colony. See picture

**stape7.** If the queen bee is not found until the end of removing the combs from the local hive, knock down the local hive on mat after holding with two hands and this helps to remove all bees remaining inside. Search for the queen bee, catch and introduce her to the transitional hive after placing it temporarily in a cage.

**stape8.** Brood combs removed from local hive should be placed inside the new transitional hive by tying the combs with rope on top bars.

**stape9.** Place all the top bars in place. Direct the swarm bees to the new hive entrance

**stape10.** When this operation is finished, look and investigate for unforeseen things around and then place the new transitional hive in a place where the former local hive was.

**stape11.** After the colony has settled well, try to check for the old combs introduced if not placed in order.

If there are old combs removed during the transferring time but not in use two important things to consider: Save these combs as they are by placing in a safe bag for later use that same day, or shortly after wards, melt and collect pure beeswax before it is attacked by wax-moth.



<b>LAP Test</b>	<b>Practical Demonstration</b>
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Name: \_\_\_\_\_

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

Time started: \_\_\_\_\_ Time finished: \_\_\_\_\_

**Instructions:** Given necessary templates, tools and materials you are required to perform the following tasks within **8-12** hours.

**Task 1:** Transferring honey bee colony from local hive to movable frame hive.(5point)

**Task 2:** Identify bee colony equipments are normal to work .(5point)

**Task 3:** Transferring honey bee colony from local hive to transitional hive.(5point)

**Instructions: write the appropriate answer for the following questions**

1. List the honey bee colony transfer equipments.(5point)
2. Write sins of colony settling.(5point)

### List of Reference Materials

- Deliverable: Manual on Beehive Construction and Operation University of Kassel (UNI KASSEL)Date:15-June 2018





- **BEGIN BEEHIVE MATERIALS RESEARCH SUMMARY Ivan Leroy Brown M Tech Industrial Design November 2018**
- **ADVANCED BEEKEEPING MANUAL Ethiopian beekeepers association JUNE 2011**