WCBA HONEYBEE REMOVAL PRACTICALTRAINING NOTES

Introduction

1. Only beekeepers with a valid registration certificate from Department of Agricultural Land Reform and Rural Development (DALRRD) may conduct Bee removals. [Agricultural Pests Act, 1983 (Act No.36 of 1983) Par (9). Amendment dd 22 November 2019]

2. There are constant misunderstandings between beekeepers and clients (who need bees removed from their premises), among others, methods being utilized, timespan of the removal, costs involved, relocating of the colony and ownership of the removed colony, honey, wax and propolis.

3. **A Bee Removal is**: The successful transfer of a bee colony from its natural nesting area into a managed beehive and the safe relocation to an apiary site afterwards.

It is NOT: Getting rid of most of the bees in the colony from their nesting area and then getting paid for the effort.

Aim

4. This document will provide practical methods and guidelines to the beekeeper for the safe and ethical removal of honeybees. Proper training, guidance and practical experience are necessary to ensure that these methods are carried out adequately.

Methods of Removals: The following are methods to be utilized for removals.

5. Shake-in/Brush-off.

   a. This can be applied with a relatively new swarm (1 – 2 days after arrival) that clusters to an open surface, easily accessible structure (branch, gate, gutter, etc.) and no comb (or almost no comb) has been built yet and the queen has not start laying.

   b. Preparation of the beehive:

      i. Base your decision for using a nuc or brood box on the size of the swarm. Add a super in case of an extremely large swarm.

      ii. Fill the brood box on frame position 1 to 4 and 7 to 10 with full wax foundation brood frames. Frames with drawn comb from disease free colonies can also be use. Fill the brood box on frame position 5 and 6 with strip brood frames.

      iii. The young swarm still needs to cluster together for heat and orientation. The two strip frames in the middle of the box will allow this to be possible.

c. Transfer of the colony:

   i. Always start with a couple of gentle cold smoke (white smoke) puffs over the colony. Calm the bees down and be calm yourself.

   ii. A very, very light fine mist spray of sugar water can be applied over the colony. This will keep them (as a ball) together for a longer period of time because they will now first start grooming each other. Never overdo the spray and totally wet the bees (remember their respiratory organs are located on their bodies). "A wet bee is a dead bee"

   iii. In the case of a hanging swarm (e.g. tree branch), remove frames 4 to 7 and fit the brood box underneath as close as possible to the swarm (make sure there are no obstructing branches and leaves between the box and the swarm). Give the branch a really hard knock with a 4lb hammer. The whole swarm (queen and all) will drop into the brood box.

   iv. Replace frames 4 to 7. Take care not to push down on the frames to prevent squashing the bees underneath. Put them back gently, leave them on top of the bees and as the bees move upwards, they will steadily drop into position by their own weight.

   v. Close up the hive with a lid.

   vi. When the swarm is clustering on a very thin branch, cut the branch with swarm and all very carefully (without shaking it) using pruning shears. Use a brood box as explained above and shake the swarm in. Replace frames 4 to 7 again.

   vii. When the swarm clusters to a vertical surface/object put the brood box (prepared as explained already) underneath. Brush the bees in and/or make use of a scoop.

   viii. If you get bees returning to the spot from where you transferred them (due to the pheromone smell), scoop them up and add them to the rest of the colony.

   ix. Alternatively, to above mentioned, try to locate the queen, cage her and fit her between two top bars in the hive. Shake off/scoop the rest of the colony in front of the hive entrance. The colony will pick up the queen's pheromone and move into the hive.

d. Practical tips:

   i. A brand new beehive can be burnt with two pages of a newspaper on the inside to disguise the overwhelming smell of wood/pine.

   ii. The beehive can be lured with commercial bee lure/two drops of lemon grass oil or heat propolis with a blow torch and smear with a putty knife to the hive floor. Never use more than two pure drops of lemon grass oil on its own as a lure. The overwhelming strong smell of lemon grass oil will rather chase them out if excessive amounts are used.

   iii. It is believed that the best results for the transfer of a colony and for them to accept the beehive is to place them in front of the hive entrance and let them walk in by own choice. An excellent practice is to use a piece of white hardboard (420mm x 420mm) and place it with an upwards angle to the hive entrance.

   iv. Make sure there are no openings between the hive and the hardboard.

v. Scoop the bees onto the hardboard. By nature, bees prefer to start walking in an upwards direction (reason for the angle of the hardboard). The “white” board will make it easy to spot the queen when she is moving into the hive.

vi. When the queen is in the hive, lots of worker bees will put their heads down (facing the hive entrance), bottoms up and start fanning her pheromone outwards to the rest of the colony. This will give them the direction to follow.

vii. Never over-smoke a colony. Too much smoke can make them airborne, brake their cohesion (disorientate them), make them nauseous and can cause runny tummies.

viii. It will be wise to support the colony with a one-to-one sugar-water mix (e.g. 1kg sugar with 1lt water) and/or a pollen substitute. It is always best practice to feed internally to prevent robbing/fighting. Bees can use up to 12kg honey to produce 1kg wax.

ix. Try not to spill sugar water or uncapped honey in the hive because it will attracts unwanted ants.

x. Make use of pre-manufactured supporting brackets to securely position your hive during the removal.

xi. A queen-trap is an option to place in front of the hive entrance to force the queen staying inside. *This remains however a “cruel” method to apply*. In this case, regular checks need to be executed, because drone cannot escape through the trap and will block the entrance.

6. Cut-outs.

a. This method will be applied to bees nesting in a cavity and secluded space which can be/has to be dismantled/cut open to gain access to the colony and the comb. It is also applicable to settled colonies in other structures (e.g. bins, drains, water features, etc.) with lots of comb, honey and brood. “Cut-out” refers to cutting out all comb and propolis.

b. Preparation for the removal:

i. Base your decision for using a nuc or brood box on the size of the swarm. Add a super in case of an extreme large swarm.

ii. Prepare the quantity off-center brood frames (with rubber bands) on the amount of comb with brood, pollen and capped honey. Pre-determined during your assessment of the removal.

iii. Off-center brood frame = it is not wired through the center of the side bars but more to either the left or right side. This creates enough space to place cut out comb on the wires and kept in place by fixing it with rubber bands around the top and bottom bars.

iv. Prepare brood frames with full wax foundation sheets or frames with drawn comb from disease free colonies to fill the spaces not being used by off-center frames.

v. Prepare four separate containers/buckets with lids for honey comb, white comb, dark comb and propolis.

c. Transfer of the colony:

i. Always start with a couple of gentle cold smoke (white smoke) puffs over the colony. Calm the bees down and be calm yourself.

ii. As far as possible, place your beehive in a position higher than the nesting area. Create a walkway from the nesting area to the hive entrance.

iii. In the case of secluded nesting spaces that need to be dismantled/cut open, start by cutting the structure on the opposite side of the entrance to the nest. This creates a bit of confusion to the guard bees (less stinging and defensiveness). "*Dislocate before you can relocate*".

iv. Open up the nesting area to expose the entire comb.

v. First identify the comb with excessive amounts of open and capped brood.

vi. Cut your way open to the brood comb and place them on the off-center frames. Remember their natural top side must always stay top side on the frames. Prioritize frames with brood and get these into the hive as quickly as possible.

vii. This brood in the hive will serve as the number one attraction for the queen and the rest of the bees.

viii. Fix the comb with pollen and honey to off-center frames and add to the outside positions of the frames with brood in the hive.

ix. Fill the empty spaces in the hive with full wax foundation or drawn comb frames.

x. Gently use smoke to direct the bees to the hive entrance or scoop them up and place them at the hive entrance. Have a lot of patience during this process and enjoy the beauty of nature while the colony takes ownership of your hive.

xi. Clean the nesting area of all excess comb and propolis into the separate containers.

d. Practical Tips:

i. See Par 5.d.

ii. In the case of drains, valves, etc. a squirt of insect repellent (<u>not harmful to bees</u>) can be prayed right at the bottom of the hole (after the comb was removed). This will give them some extra speed to exit the hole. <u>Don't spray directly on the bees</u>.

7. <u>Forced Abscond</u>.

a. Forcing a swarm to abscond their nest by applying constant gentle cold smoke or a chemical repellent (e.g. benzaldehyde). This is a good option to use in the case of time constraints, to restrict structural damages/costs and where dismantling of the nesting structure is not an option.

b. Preparation for the removal:

i. A Forced Abscond does not imply that you will not be able to transfer the colony to a hive. There is however a bigger risk with this method that the colony will abscond to a position out of reach/distance away.

ii. More than one hive can also be put in place (almost like catch boxes).

iii. Base your decision for using a nuc or brood box on the size of the swarm.

iv. Fill the brood box on frame position 1 to 4 and 7 to 10 with full wax foundation brood frames. Frames with drawn comb from disease free colonies can also be use. Fill the brood box on frame position 5 and 6 with Strip brood frames.

v. Prepare with benzaldehyde, flexible plastic pipe and syringe.

c. Removal procedure:

i. Place the prepared hive/hives in a position higher than the flight path of the colony.

ii. It is possible to create a Forced Abscond with the use of smoke only. This is more likely in the case of a small swarm and/or a young swarm (not much comb and brood yet). Never over-smoke a colony.

iii. When smoke is not successful, a chemical repellent (e.g. benzaldehyde) can be used. The substance must be applied as far back/down from the comb (opposite from the entrance to the nest) as possible.

iv. Make use of flexible garden drip irrigation pipe and maneuver it pass the comb as far into the nest as possible.

v. Fill a syringe with 10ml benzaldehyde.

vi. Apply the chemical through the pipe.

vii. The smell will drive the colony out. A second round can be applied again if necessary.

d. Practical Tips:

i. See Par 5.d.

ii. Never overdo the application of chemicals because it will result to disorientate and/or lots of dead bees.

iii. Sealing off both sides of an air vent for two days with a fairly new swarm (1 – 2 days old). Open up one side on day 2 and the whole colony normally abscond the vent with rapid speed. This can also be seen as a Forced Abscond.

iv. A heat detection application can also be used to locate the position and size of the colony. Drill a hole underneath and smoke them out.

8. Bee-vac.

a. Suck-up a swarm with a modified vacuum cleaner connected to a box/container with a false netted floor or into a netted cartridge. A vacuum cleaner can also be connected directly to your brood box. This is a handy method for uneasy nesting areas like ceilings or a deep cavity in a tree.

b. Preparation for the removal:

i. Prepare a hive on frame position 1 to 4 and 7 to 10 with full wax foundation brood frames. Frames with drawn comb from disease free colonies can also be use. Fill the brood box on frame position 5 and 6 with strip brood frames.

ii. Prepare different lengths of pipe and smaller size nozzles.

c. Removal procedure:

i. Gently smoke the bees to leave the comb and cluster next to it. Do the suction of the bees after they are separated from the comb.

ii. Do not suck the bees directly from the comb. The suction may damage the comb and enters into the container with the bees.

iii. Uncapped honey will create a big mess with regards to stickiness on the inside of the bee suction pipe, the container and the bees.

iv. Don't suck in debris with the bees.

v. Fit a smaller nozzle to the end of the bee suction pipe for the hard to reach places.

vi. Start with cutting out the comb after all the bees have been sucked up.

vii. Transfer of the bees from the bee-vac container to the hive can be done on the removal site but the safest option is to do this at the apiary site ± 5km away (only if the bee-vac has sufficient ventilation). This will ensure that the swarm will not return to the removal site.

viii. This transfer can be done by either shake-in or placement in front of the hive and let them except it by own choice (see Par 5.d.iii.).

ix. It always remains an option to spot the queen, cage her and put her in the hive to enhance the success of the removal.

d. Practical Tips:

i. See Par 5.d.

ii. Make sure to use a vacuum cleaner with variable speed adjustments. Full speed suction is normally detrimental to the bees.

iii. A Bee-vac causes lots of stress on bees. Be discreet in the application of this method.

iv. Make use of a bee suction pipe with a smooth inner surface and always attempt to keep the bee suction pipe as short as possible. This will minimize the detriment to the bees.

v. Increase the pipe length between the vacuum and container to reach larger distances.

vi. Make sure the container has sufficient ventilation.

9. <u>Combinations of Bee-vac with Shake-ins, Cut-outs and Forced Absconds</u>

a. A Bee-vac can be used as a force multiplier in conjunction with any of the Shake-in, Cut-out or Forced Abscond methods.

b. It is normal to have bees clustering in and around the old nesting/removal site during and after the removal. Pheromone and open honey are normally the attractions.

c. Large amounts of bees can be safely sucked up and added to the colony in the hive (on-site or at the apiary site).

10. <u>One-way trap/Trap-out/Funnel</u>.

    a. Bees nesting in a cavity and secluded space which cannot be dismantled/cut open to gain access to the comb and a Forced Abscond is not effective due to drafts or extreme long cavities.

    b. Preparation for the removal:

        i. Prepare a hive on frame position 1 to 4 and 7 to 10 with full wax foundation brood frames. Frames with drawn comb from disease free colonies can also be used. Fill the brood box on frame position 5 and 6 with strip brood frames.

        ii. Prepare a funnel. Make sure the size of the exit hole is a minimum of 8mm.

        iii. Prepare a supporting bracket to secure the hive.

        iv. It is always handy to have extra foam, silicone sealant, inner tube, etc. available for sealing off alternative exits/entrances.

    c. Removal procedure:

        i. Apply gentle smoke into the entrance of the nest.

        ii. Depending on the nature of the nesting area, different volumes of smoke will be applied. (e.g. a tree with many possible exits, smoke can be used to locate all the exits that need to be plugged).

        iii. Fit your funnel with an upward angle to cover the entire entrance/exit.

        iv. Mount your hive in a position with the landing board ±200mm above the base plate of the funnel. The bees must be able to walk onto the landing board. They will steadily move from the base plate into the hive and accept it as their new home until the queen emerges.

        v. Make sure that the funnel is the only way to exit and there are no other openings for the bees to re-enter their nest. Make regular visits to confirm this and ensure that current placement is fully effective.

        vi. The bees get trapped on the outside no more food is entering the nest and the queen stops laying. The last laid eggs will only hatch ± 21 days later. Therefore it will be safe to keep the trap in place for a minimum of 4 weeks.

    d. Practical Tips:

        i. See Par 5.d.

        ii. The key factor for trap-outs is that there must be only **one** exit for the bees and that is the exit hole of the funnel. All other possibilities (e.g. holes) must be closed off.

        iii. It is not recommended to do a Trap-out during the colder months of the year. This method puts the bees through a lot of stress because they get separated from their comb, brood, pollen and honey.

        iv. In case of an air vent: design your funnel to match the standard measurements of/between bricks in a wall. The funnel must at least cover one brick's width around the vent. Pre-drill four holes in the baseplate to match the cement between the bricks.

        v. Only the exit end of the funnel must let in sunlight (this will facilitate the direction and speed to exit). Cover/spray the body/pipe of the funnel in black.

        vi. Make sure there is enough perforation on the funnel's body closest to the normal entrance of the nest. This will allow for the pheromone to escape and attract the bees to that point. It will thus keep them away from the funnel's

escape hole and try to re-enter there. It will also prevent them to start clustering a distance away from the hive.

vii. Always thoroughly clean the funnel's escape hole/exit from any attractive bee, wax, honey, etc. smell that may lure bees and cause them to re-enter.

viii. The inner surface of the funnel needs to be rough (make it easy for the bees to walk) and the funnel must be fitted with an upwards angle to support the bees to the exit.

ix. When the bees have found the funnel's exit to re-enter, you need to change the direction/position of the exit.

11. Extermination. ***(must always be the last resort)***

i. **Problematic colonies**: The nest is in an unsafe location. For example high voltage electricity, highly flammable substances, etc.

ii. **Urgency of removal**: There is no time for a planned removal due to the nature of the threat.

iii. **Inaccessible colonies**: There are absolutely no options to gain safe access (working platform/surface) to the nesting area for a removal task.

iv. **American Foul Brood (AFB) infected Colonies**: AFB is a notifiable disease and the colony has to be exterminated. If AFB is detected at a removal site these principles must also apply. The client must be informed about this in no uncertain terms.

v. There is by law no prescribed chemical to exterminate bees.

(Compiled by Gerhard Olivier: July 2021)