



National Bee Unit

Using Artificial Swarms for *Varroa* Control

Many beekeepers perform artificial swarm manipulations to either control swarming or increase colony numbers; however with a few minor changes artificial swarming can remove the greater portion of a *Varroa* mite population.

Why should I consider using this procedure?

During early nectar flows, medicinal controls may not be practicable or desirable. There are many bio-technical *Varroa* control methods to choose from and one of the most effective and beneficial methods at controlling mite populations is an artificial swarm control.

How effective is it?

It is claimed to remove up to 90% of *Varroa* mite population.

How does it work?

Beekeepers should be aware of the following areas of *Varroa* biology in which these systems rely:

- a) *Varroa* mites mature mostly on younger house bees;
- b) Unless a colony is collapsing flying bees carry very few *Varroa* mites. Scientists have calculated that an artificial swarm made up of the flying bees only, (including 5% drones) will carry about 1.7% of the colony mite population;
- c) Mature *Varroa* mites enter open brood, just prior to capping over, for their reproductive phase. Therefore if a colony is broodless it can be baited by inserting combs of open brood. The mature mites will enter the cells to reproduce and when the cells are capped over they can be removed and destroyed.

How is it performed?

Many division methods have been described but a simple system, based on the 'Pagden' method of swarm control and developed by Dr Wolfgang Ritter is as follows:

Select a day when a colony is showing signs of swarming and the bees are flying freely.

Day 1

- 1) Move the chosen colony four metres to one side of its original site. This colony is known as the 'parent' colony;
- 2) On the original site place a complete new hive, containing drawn brood comb or foundation, built up in the following way: floor, queen excluder, brood box containing comb/foundation, crown board, feeder and roof. This colony is known as the 'swarm';
- 3) Examine the 'parent' colony, find the queen and gently place her in the new brood chamber. Do not transfer her with a frame of brood from the parent colony as this will only transfer more *Varroa* mites into the 'swarm';
Destroy any queen cells if present and leave the supers on the parent colony.

Unless there is an adequate nectar flow the swarm colony will need feeding. If using foundation the feed will encourage the bees to draw out good even combs. The purpose of the queen excluder below the brood chamber is to prevent the queen absconding.

Day 7

- 1) Examine the parent colony. Destroy all queen cells except one, which should be unsealed; leaving two cells could run the risk of a secondary swarm leaving your parent colony when the first of the two queen cells hatch. If there are many queen cells, they can be cut out and used in nuclei or mini-plus mating hives to raise queens for re-queening/increases later in the season.
- 2) Place the single queen cell in a nursery cage or place a cell protector around it. This will allow the queen to hatch and the workers to feed her, but will not allow her to fly and mate. (Keeping a virgin queen in this colony will maintain its social structure.)

**Optionally*, to maintain adequate food for the swarm colony, remove the supers from the parent colony, shake out the bees in front of its entrance and place the supers on the swarm colony. The parent colony will probably need an empty super to accommodate the bees. Feed the parent colony if there is no nectar flow.

- 3) Examine the swarm colony. Remove the feeder and check that there is drawn comb and brood present. Remove the queen excluder from under the brood

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chamber and place it over the brood chamber. Place the supers from the parent colony on the hive if applicable.

Day 21

- 1) Examine the swarm colony and take out two combs of open brood and replace them with clean drawn combs or foundation.
- 2) Examine the parent colony. All worker brood should have hatched. Cull any drone brood remaining.
- 3) Remove two combs from the centre and replace them with the two open brood combs from the swarm colony, adjacent to the caged queen. These are bait combs.
- 4) The old combs removed should be melted down and recycled. The virgin queen remains in her protector or she could be relocated into a queen cage. Feed if required.

Day 30

Examine the parent colony. Remove and destroy the capped over bait combs. The caged virgin queen is culled and the colony re-queened perhaps from a nucleus set up at day 7.

NB Do not allow bait comb to hatch, as this will re-infest the colony. Finally, depending on requirements, either:

- 1) If an increase in stocks is desired, keep both colonies and, if necessary, replace the old queen in the swarm colony

or

- 2) If no increase is required then when the new queen is in lay cull the old queen in the swarm colony and re-unite with the parent colony.

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