

QUEEN INTRODUCTION

A breeder queen is too valuable to loose when introducing into a colony. Reduction of queen losses during the yearly queen replacement in overwintering colonies is of considerable economic importance. Each queen lost represents at least a \$5 loss in profit.

Using new knowledge of queen and worker behavior at the Beaverlodge Research Station, researchers modified existing methods and developed a safe system for queen introduction.

RECOGNIZING THE QUEEN

Young workers accept any queen; however, workers 8 to 12 days old learn to recognize their own queen. Probably the most important factor in queen recognition is the rate of the queen's pheromone production and evaporation. Other characteristics could also be important, such as the queen's weight and age, which are associated with attractiveness and probably with pheromone quantity. In certain circumstances hive odor or hive and colony odor could also play a role. These characteristics of queens are influenced by such nutritional and environmental factors as feeding or honey flow. Workers in close contact reject any queen which is different enough from their own. Queenless workers accept a new queen more readily. Successful introduction is probably contingent upon: 1. fading the memory of workers (through the temporary absence of queens), 2. altering certain characteristics of the new queen to suit the new colony, and 3. eliminating the defence reaction of the bees by releasing the queen slowly.

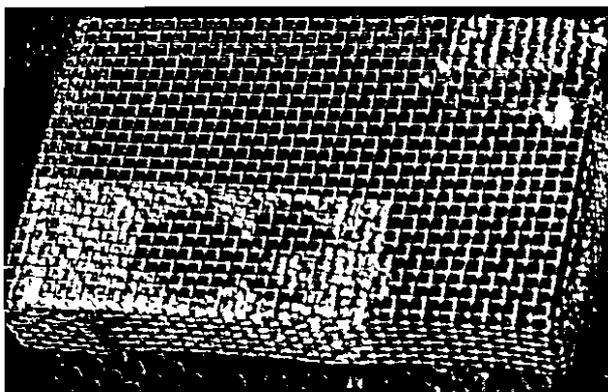


Fig. 1 A push-in cage used to confine and protect the queen.

PRACTICAL STEPS OF QUEEN INTRODUCTION

Push-In Cage

A push-in cage (Figure 1) is a simple device used to confine and protect the queen for a limited period. It is made from 3 mm (#8) mesh wire screen, cut into a 165 x 115 mm rectangle. A 20 x 20 mm square should be cut from three corners. The escape tube is built at the fourth corner by making one 32 mm cut, parallel with the short side, 20 mm from the corner. Then the 20 mm strip should be folded up at right angles on all four sides. The end of the 32 mm cut also should be folded up at a right angle. This gives a four-sided screen wire cage with an open bottom, 20 mm sides, a 20 x 12 mm opening (with 32 x 12 mm screen tunnel) in the side, and a 125 x 75 mm top. A 32 x 12 mm escape tube (made from a strip of tin) should be soldered in the screen tunnel opening and filled with soft candy (a mixture of icing sugar and invert sugar).

Queenless Colony

The new laying queen should be introduced into a colony which has been queenless for about five days. If the new queen was shipped, the queenless period should be seven days and if the queen is virgin the period should be 20 days. Finding the queen is easy during the spring when the colony's population is at its lowest. The same task during summer and fall is more difficult. Divide the colony with the help of an inner cover or move part of a colony to a new hive, leaving the queen with a portion of the workers. About five days later, all the queenless parts will have queen cells and the old queen can be found and removed with fewer difficulties. Each division of the colony could be requeened early in the season. During August and September the divisions should be united before introducing the queen.

Queen Introduction

Queens usually arrive in mailing cages. Before introduction, remove all attendant workers from the queen cage. Do this indoors, near a closed window where the queen can easily be caught if she escapes. Next destroy all the queen cells in the colony. Then find a comb with an emerging brood and shake off the bees. Place the push-in cage on the comb so that the area covered

contains the emerging brood, honey, and empty cells in a ratio of about 1:1:2. To prevent the queen from escaping, remove the cork of the mailing cage and cover the hole with one finger. Then press the cage into the comb of empty cells so that the open end is up. Place the push-in cage above the mailing cage and press it into the comb. The queen will find her way out of the mailing cage and soon will be accompanied by the newly emerging workers from the push-in cage. She will be able to continue or start egg laying and alter her characteristics according to the colony. The colony

workers will consume the candy from the escape tube in two to three days and then the queen will be able to leave the push-in cage.

Checking the New Queen

After introducing the queen, the colony should not be disturbed for about 10 to 14 days. The colony should then be opened and the cage removed. Usually the presence of a large number of uniformly laid eggs and larvae is proof of successful queen introduction.

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