



Atlantic Tech Transfer Team
for Apiculture

MARITIME QUEENS: THE IMPORTANCE OF PRODUCING OR PURCHASING LOCAL QUEENS

The objective of this fact sheet is to outline the benefits and advantages of using locally-reared and adapted queens in beekeeping operations.

LOCAL VS IMPORT. IS THERE REALLY A DIFFERENCE?



The quality of imported queens can be variable, and in certain cases, poor queen acceptance has been associated with imported queens. Furthermore, imported queens

are selected and bred under different conditions than in our region. As a result, queens that are considered superior stock in other parts of the world may not have the same qualities that we are looking for in the Maritimes. Local queen breeders take great care in selecting superior stock that performs well under our conditions.

WHY DO WE IMPORT QUEENS?

Of course there are instances when purchasing imported queens is desirable or even necessary. Many beekeepers require a source of queens early in the spring in order to re-queen poor performing colonies and/or prepare for early pollination periods (e.g. wild blueberry) or early honey flows. In the Maritimes, we are at a unique disadvantage where we are unable to have locally produced queens available until June



or July. This is too late for any beekeeper who wishes to split colonies to make pollination units for blueberry pollination, and may result in the colony swarming before local queens are available to split the colonies. An effective technique to overwinter queens, besides in nucleus colonies, has yet to be devised on a commercial scale. Although queens can be successfully overwintered in nucleus colonies, the value of the nuc in the spring is greater than the value of the individual queen, and thus it is difficult economically to motivate queen breeders to sell individual queens early in the spring.

Beekeepers may also wish to import superior genetics, a new breeder queen line, or simply diversify their genetics, and decide to import queens from outside the region.

WHY IS IT IMPORTANT TO BUY LOCAL QUEENS OR TO REAR YOUR OWN QUEENS?

There are a number of reasons to purchase locally produced queens. Local queen breeders take great care to select for favorable genetics that are most appropriately suited to our climate. Queen breeders are constantly assessing and selecting stock based on overwintering potential, spring build up, swarm tendency, honey production and hygienic behavior. Imported queens



Funders and Contributors:

Bleuets NB Blueberries

New Brunswick Beekeepers Association Inc.

Nova Scotia Beekeepers' Association

Wild Blueberry Producers' Association of Nova Scotia

Prince Edward Island Wild Blueberry Growers Association

PEI Beekeepers' Association

Jasper Wyman and Son

have not had the same selection pressures as local hives, and as a result, may not respond to our unique conditions in the way we expect or wish them to. Secondly, when queen breeders are producing queens, they graft the most appropriate aged larvae. This promotes high quality queens produced under conditions where the larvae are fed immense amounts of royal jelly, which, as discussed later in this fact sheet, is advantageous. Finally, it is important to purchase local queens to support the efforts of local queen producers. Producing queens is not an easy task, and it is important to support local breeders to ensure that they continue to produce queens.

Alternatively, if you have a large number of hives, you may decide to try to produce your own queens. This is not recommended for beginner beekeepers, or for beekeepers with fewer than 10 hives. If you do decide to produce your own queen cells or queens, it can be a very rewarding experience.

YOUNG QUEENS ARE PRODUCTIVE

One of the most important factors that is often overlooked in colony management is the replacement of older queens. Having hives headed with young, robust queens is one of the best ways to reduce disease pressures, reduce swarm pressure, maximize spring build up, and optimize honey production. Colonies that are headed with a young queen are less likely to swarm during the season, and young queens also tend to start laying earlier in the spring, and maintain a larger brood nest than older queens. There is a clear advantage for beekeepers to keep good records of queen age, and to replace older queens with younger queens. There is no “perfect” age to replace queens because each colony is different, however, generally queens aged 3-4 years old tend to lose their vigor.

HOW ARE QUEENS PRODUCED?

Generally, queen cells are produced under three different impulses: as emergency cells, as supersedure cells, and as swarm cells. Although all of these impulses result in new young queens, the queens are not created equally. For example, when queens are raised under an emergency impulse, the resulting queens are often inferior queens. This is largely due to the fact that these queens are produced under “emergency situations” and the larvae are typically not



cared for as well as they could be, or the bees choose to raise the queen from older aged larvae. When a beekeeper makes a walkaway split or if a queen gets “rolled” (killed), once the bees realize they are queenless, they will shift into a panic state and attempt to raise their own replacement queen. To accomplish this, the bees will pick a few larvae between 1-3 days old and will continue to feed these larvae royal jelly to produce queens. Because these bees are often in a panic state when these queens are produced,

the bees may select a larvae that is slightly too old to become a good queen, and the queens may not be fed as much royal jelly as queens that are reared under other impulses. In the case of a walkaway split, there are often fewer nurse bees to take care of the developing queen larvae. Queens raised from older larvae will hatch first and will often become the new queen of the hive, even though they may not be the “best” queen that the colony produced. Beekeepers who make walkaway splits may notice that the queen cells produced are small or “runty”, the resulting queen may be small, and the new queen is often superseded by the bees after a season.

The second impulse that bees will produce new queens under is the supersedure impulse. If a colony notices that a queen is getting older and she is not laying as many eggs as she should be, or her pheromone levels are reduced, the colony may decide to replace the queen while the original queen is still actively laying in the hive. A colony may also decide to supersede a queen if she is damaged in any way. Sometimes during a hive inspection, a beekeeper may damage a queen, and the colony may decide to replace her. Since the colony is still queenright, usually with an abundance of nurse bees and available resources, supersedure cells often result in good queens because the bees can select the correct aged larvae to feed, and will often only care for a few cells. As a result, supersedure cells may be much larger than emergency queen cells.

The third impulse that bees will produce a new queen under is the swarm impulse. Queens produced under the swarm impulse are often the highest quality queens. An increasing bee population in the hive, accompanied by increases in the abundance of available pollen and nectar, are what kickstart the swarming impulse. When a colony decides to swarm, they will produce many, well fed, high quality queen cells. These cells are started from eggs, ensuring the larvae are properly nourished, and good quality spring pollen and nectar also contribute to these high quality cells. There is also a large population of bees at this time, ensuring suitable energy and resources can be directed into developing queen cells, with an abundance of young bees to attend to the developing queen larvae. This is why swarm cells are often very large, and there are typically many cells per hive. As a result, queens produced under the swarming impulse are often very good quality queens, and most beekeepers who produce their own queens often make use of the swarm impulse, and use a modified method to produce cells under the swarm impulse behavior, without allowing the hive to swarm.

ARE QUEENS PRODUCED UNDER DIFFERENT IMPULSES THE SAME?

The short answer: no. As previously discussed, queens that are produced under the emergency impulse either by walkaway splits or by accidentally rolling a queen may be inferior queens. These queens may also be replaced by the bees after a year. If the correct conditions are in place, however, meaning the cells are well fed, and the correct aged larvae are selected, emergency queens have the potential to be good queens. As a result, splitting hives and allowing the bees to raise their

own queen is an option, but it may not be the best option for rearing a new, young, productive queen. Another issue with allowing bees to raise their own queens is that the beekeeper is “recycling” the same genetics over and over again. Although this may be favorable for hives with excellent genetic qualities, this is not the case for most hives in most apiaries. By introducing mated queens or queen cells from a queen breeder, beekeepers can constantly work towards improving favorable genetic traits in their apiaries.

Aside from queen quality, there is also a great advantage in the time it takes a colony to reach full strength when using queen cells or mated queens, compared to allowing the bees to raise their own queen. When making a five frame nuc, beekeepers can reduce the development time of the colony by a considerable amount by introducing a mated queen or a ripe queen cell. By purchasing or raising local queens or queen cells, higher quality queens may be achieved in addition to a time advantage for the colony to reach full strength. The advantage of using mated queens and queen cells is outlined in ATTTA’s “A Closer Look at Splitting and Nucleus vs Packages Buildup”.

*Prepared by Sawyer Olmstead and Robyn McCallum, 2019.
Atlantic Tech Transfer Team for Apiculture (ATTTA).
Photos by R. McCallum.*

Resources:

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Connor, L. J. 2015. Queen Rearing Essentials. 2nd Ed. Wicwas Press LLC. Kalamazoo, Michigan.

For more information, contact:

Robyn McCallum or Sawyer Olmstead
Atlantic Tech Transfer Team for Apiculture
Tel: 1-902-896-0277
Emails: rmccallum@perennia.ca, solmstead@perennia.ca
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