

## INCREASING FROM 100 TO 1,000 HIVES IN THREE MONTHS

H. YEGANEHRAD

Caspian Apiaries, P.O. Box 16058 – 617, New Westminster, British Columbia, CANADA, V3M 6W6  
E-mail: radbees@hotmail.com

### Abstract

On the June 3rd 2002 100 hives with an average population of 20 frames were selected with the objective of creating a 1,000 hive apiary. First, the queenless colonies were fed 12 liters of supplement that was a mixture of caspian solution (royal jelly / pheromone), pollen, honey, sugar, water, and other natural ingredients. The objective of the feeding was to stimulate the hypopharyngeal glands of bees to produce enough royal jelly for queen cells. Second, the population was divided and one queen was placed with three frames with no brood (only comb). Third, the queenless frames, an average of 17 from each mother colony, were divided to create a total of 1,000 colonies where each colony contained at least 2 frames. After five days each of these hives had an average of five large, healthy queen cells. After seven days the eggs and larvae from the 100 mother hives were moved to the queenless hives, this step prepared the colonies for a balanced condition of field and nurse bees when the new queens started to lay eggs. 900 queens were created and only 7 of the queens were lost. The 7 lost queens were replaced from the mother hives. By July 1st the new queens had started laying eggs and there was an average of 5 frames of population and 2 frames of brood, which originated in the mother colonies, in each of the new hives.

**Keywords:** population increase / supplement solution / 100 to 1,000 hives

### Introduction

Every beekeeper should have a methodology for increasing the population of his apiary. The technique described in this paper is simple, cost effective and matches the success achieved by beekeepers that use grafting systems. This technique has been used by the author in Iran and Canada, and the methodology offers added value in Canada and other cold climate countries for the following reasons:

1. the loss of bees in the winter can be quite high,
2. there is a limited supply of packaged bees from a small number of countries,
3. air freight companies restrict the number of loads of bees that can be shipped into the country,
4. there is a small number of queen breeders in the country, and
5. most breeders cannot provide queens early in the season.

Each operator must assess the relative merits of this methodology and grafting techniques. This paper does not provide a labour and material comparison, but it is clear that the method described below is more labour intensive than grafting.

### Materials

- 100 original hives each containing 20 frames of population,
- 900 new hive boxes,
- 9,000 empty frames with comb (new or used),
- caspian solution (a stimulative supplement containing royal jelly, pheromones and other natural ingredients),
- pollen, sugar, honey and water.

### Methods

Figure 1 – The Hive Increase Program illustrates the physical movement of frames, queens, population and brood. The step-by-step process is described below beginning with 100 hives with an average of 20 frames of population and 100 frames of purchased brood and population.

### Figure One - The Hive Increase Program

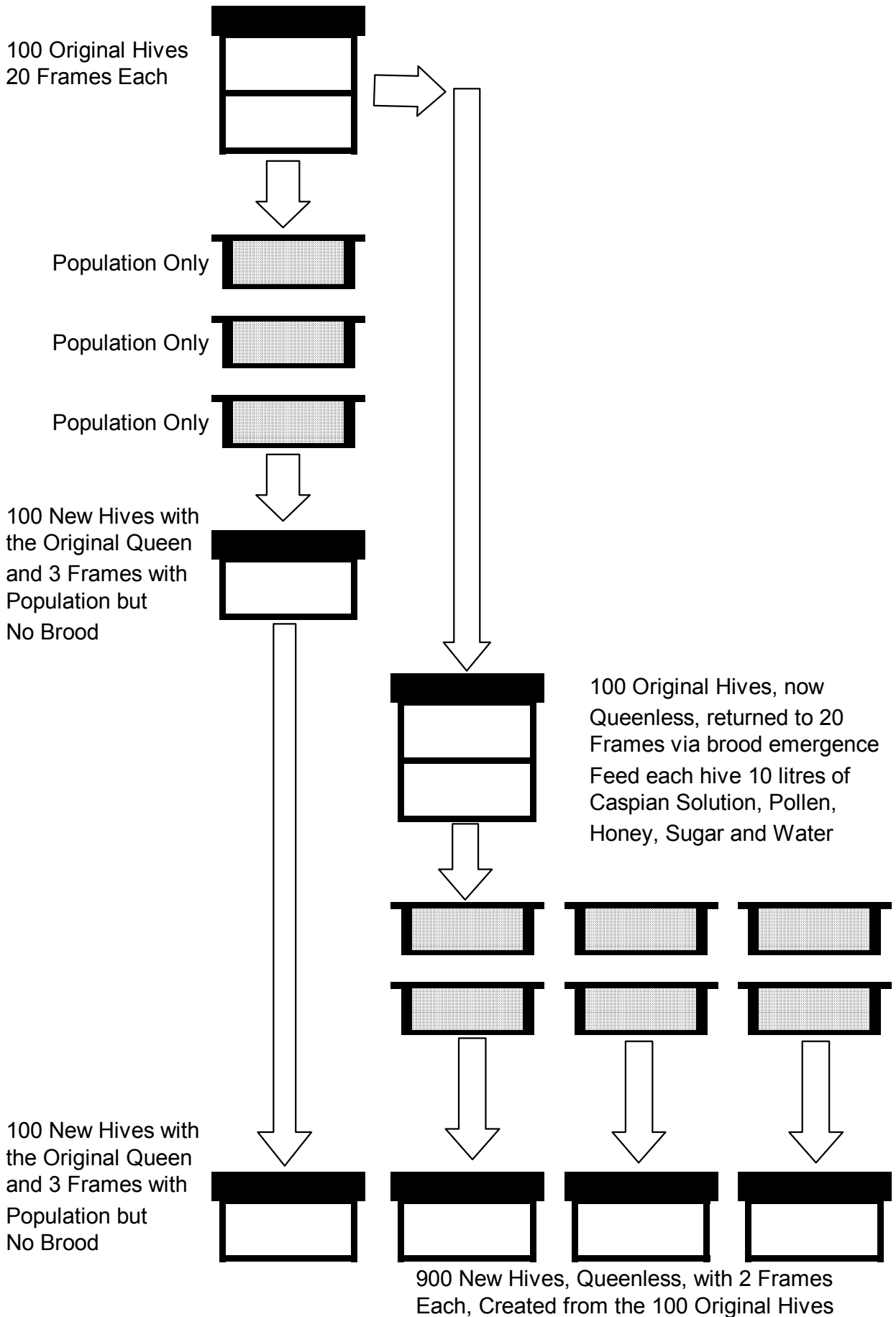


Figure 1 – The Hive Increase Program

1. The mother hives were fed one week before the first steps in the population increase program. At the beginning of the week each colony received 6 liters of caspian solution mixed with pollen, honey, sugar and water. In the middle of the first week each colony received six more liters of the liquid supplement. The supplement provided a large quantity of protein that was easily consumed by the bees, as it is in liquid form, and contains a strong royal jelly and pheromone stimulus.
2. At the end of the first week the population was divided and each of the 100 queens were placed with three frames of population in a new colony. One frame of population was with brood. These hives became the brood makers for the new apiary. These hives were fed caspian solution mixed with pollen, honey, sugar and water.
3. Three new frames of comb were placed in each of the 100 original hives and the emergence of bees quickly returned each hive to 20 frames of population.
4. Within three days of the first removal of population and brood the 100 queenless hives were divided to create 900 new colonies each with two frames of population, but no queen. These queen makers were able to establish five large healthy queen cells after five days.
5. After seven days the mother hives or brood makers from step 2 were able to produce an average of two frames of eggs that were moved from those hives to the queenless colonies. This movement of brood was done to balance the population of field and nurse bees when the new queens started to lay eggs.
6. The warm July weather combined with the stimulative effect of the caspian solution create 893 mated queens between 18 and 25 days after the hives had selected the larvae for queen raising. The 7 queens that were lost were replaced from the mother hives. When the new queens began to lay eggs each of the colonies contained five frames of population and two frames of brood. As mentioned above, this quick start was due to the movement of brood from the mother hives.

## Results

Working with basic equipment and a sufficient number of workers to set up and move the required number of hives and frames our team was able to increase the size of the apiary tenfold. The production of 900 queens simply required the careful combination of protein potential and stimuli from pheromones, larvae and the queenless condition. The nutritional aspect of this exercise must not be overlooked as the area in which this activity was carried out provided no pollen and only a small amount of nectar. Our apiary team used an equalizing technique to deal with the inevitable drifting in the new apiary as bees were moving to colonies that had more eggs and larvae. It is not the purpose of this paper to discuss our equalizing practices, as any of the various techniques would work well. Pollen supply was critical to the outcome of this exercise as the young queens were compelled to lay large quantities of eggs; therefore, they needed large quantities of jelly.

## Discussion

Explaining this rapid population increase program has offered another opportunity to explain the vital role of nutrition in bee biology and beekeeping. The caspian solution supplement mix provided large amounts of pollen and a significant stimulus that caused the bees to eat the pollen. Once the nutritional needs of the bees was met the increase simply required the provision of the right equipment at the right time. The time and labour required to divide the hives, move frames of eggs from the brood maker hives to the queen maker colonies and equalize the population is significant, but manageable. Ultimately the physical management of the expansion simply requires careful observation and quick response to egg laying and the maturation of the queens. For many beekeepers the opportunity to expand their operation without using grafting techniques is quite interesting.