

Spring Feeding of Honey Bees by Julian Routh

Introduction

The autumn and winter of 2011/2012 have been unusual in weather conditions being appreciably warmer than normal followed by a cold wet spring, this is possibly the worst case scenario for honey bees as the nectar and pollen that they depend on is not available at this time and many colonies have used all of their stores much earlier than a normal winter and before nectar comes available in sufficient quantity. This has led to starvation in many colonies and a slow build up in others limited by lack of stores.

This paper covers the reasons for a colony making excess use of stores and the measures beekeepers can take to limit the effect on their colonies.

Honey Bee Colony Requirement for Stores

Honey bees are one of the few insects that maintain a large colony throughout the year although the colony size will decrease over winter it may still be tens of thousands of bees. Honey bees depend on nectar and pollen from flowers as their food source and make stores of this to see them through the winter when there is insufficient forage to feed the colony.

The most obvious store is the honey in the hive which is produced from the nectar collected during the spring and summer when there is an excess for the honey bees to store away. Stores of pollen are also held in the hive and also the 'winter' bees are physiologically different and have fat and protein stores within their bodies to allow feeding of the larval stages in the spring before pollen occurs in sufficient quantity.

Both honey bees and beekeepers work on an average season to evaluate the quantity of stores required for the winter. Honey bees will store honey if they have the space available and beekeepers make use of this by providing additional space in the hives so that if there is an excess of nectar the bees can store more than they will need for the winter and any surplus can be taken off as a honey crop.

The honey bee colony will require a minimum of 20 kg of honey to see them through a normal winter if of average size, more if it is a large colony. The beekeeper must ensure that the colony is left with sufficient stores and if a small colony has not collected adequate stores this can be augmented by feeding with sugar syrup. In some summers there is so little nectar owing to the weather and growing conditions that most colonies will need additional feed and no honey will be harvested.

Honey bees will start to consume stores as soon as an insufficient quantity of nectar is being brought into the hive to meet the energy requirements of the colony. The energy requirement will depend on the activity of the colony which in itself is dependant on the ambient temperature and the humidity.

Honey bees will tend to use more stores in warm damp winters than in cold dry winters as the cluster formed in winter will be looser and lose more heat, in addition if the weather is warmer the brood laying will continue later and start earlier requiring the brood area to be maintained at 34-35°C rather than the 19°C required when there is no brood. In cold dry winters the cluster is very tight and loses little heat and uses far less energy.

The Need for Feeding in Spring

The ideal state for a colony of honey bees is that they have sufficient stores of honey going into winter and that the weather conditions are such that these stores will last until the nectar flow starts in the spring. In most years for most beekeepers this is the case.

In warm autumns and winters leading up to Christmas the bees will still be active and using up stores but at this time the stores are likely to be adequate but will be used up at an excessive rate. In most winters brood laying stops in December, a tight cluster forms and very little food is used.

A check can be made by the beekeeper at New Year by hefting the hives (lifting one side to get an idea of the weight), following a warm run up to Christmas this may be lighter than expected.

The only option for feeding at this stage is to use fondant or candy which is used in a semi solid state above the feed hole in the crown board or on top of the brood frames. Bees are unable to manage a liquid syrup feed at the temperatures normally found at this time of year. If stores are very low this feeding of fondant may have to continue until nectar is available in sufficient quantities often in April and regular checks have to be made to ensure that the supply of fondant is maintained.

If January is also warm then it is possible that brood rearing can continue right through the winter requiring the cluster to keep at 35°C using much more energy than normal and hence more food. In most winters in the UK brood rearing does not start until late January when the requirement for food will increase.

If the spring continues warm, food will be used at a greater rate and the stores will continue diminishing rapidly until nectar becomes available again in April. This consumption of stores puts a strain on the colony and if the stores run out the colony can starve rapidly.

The worst case scenario is a warm wet winter followed by a warm spring that suddenly turns cold as the nectar bearing plants start to come into flower and at that stage the colony will have built up well in the warm spring and used stores at a rapid rate and then is unable to replenish them at a time of maximum need. A winter and spring such as this has occurred in 2011/2012 and without feeding many colonies have come close to starving or starved before the beekeeper starts his regular spring inspections.

Feeding Summary

- In autumn ensure that the colonies have sufficient stores of honey (minimum of 20kg), if not feed with sugar syrup.
- Check the hives by hefting or weighing at the turn of the year to ensure sufficient stores (this becomes easier with experience)
- If the hives feel light a fondant feed should be given and continued until the bees cease to take it, this will be when a sufficient supply of nectar is found.
- As soon as the weather is warm enough (>14°C) a quick look in the hive will indicate whether sufficient stores are present, this should be at least two brood frames of sealed stores for comfort.
- Only when the nectar flow starts should feeding be stopped when it is obvious on inspection that the stores are being replenished adequately.
- Continue to check the level of stores at every inspection as a bout of cold weather can stop a nectar flow or the main crops can be over removing the source of nectar. This is often in early to mid June (the June gap between spring flowers and summer flowers). If stores are insufficient a feed should be supplied, at this time sugar syrup in a contact feeder is a quick way to get food to the colony, do not feed if supers are in the colony as the sugar can contaminate the honey stores and bees will always fare better on honey than syrup.
- When supers become full always ensure that sufficient stores are left with the colony before removing the supers especially important with spring flows such as Oil Seed Rape as the brood area will be at maximum size and there may be no room for stores in the brood box.