



Fall/Winter Management

Dana Stahlman

You know fall has arrived when: you see soybean and corn being harvested. Or goldenrod is blooming!



A new look at honey bee management!

Keeping honey bees' alive is a challenge during any part of the year. Winter survival has always been an issue.



Honey bees do survive without any management by humans -- A hive that survived for 10 years or more without any management.

Honey bee behavior changes as days grow shorter, food sources decline and weather conditions become more unpredictable.

Biology / Conditions that honey bees use to survive



Honeybees over centuries have adapted in the following ways to survive.

- **Consolidate (shrink) the brood nest.**
- **Slow and eventually halt brood rearing.**
- **Form the winter cluster**
- **Reduce the population (Older summer bees die and drones are no longer needed)**
- **Store food resources around and above the consolidated brood nest.**
- **And should I mention defend the nest.**

- **A brief look at traditional fall management. Nearly all honeybee books written have provided beekeepers with a list of task to be completed prior to the beginning of the winter season.**



Some books written included two phases of fall management [fall honey crops and getting ready for winter]. One of the more popular books published thru the 1950's was "Beekeeping" by Eckert and Shaw.

Fundamental principles that contribute to hive survival during the winter:

- **The presence of a vigorous, productive queen.**

Fall Management



2. A population of predominately young bees in sufficient numbers to insure the survival of the colony in a productive condition.

Sound principles

1. Sufficient stores of good quality honey/food, properly placed, to provide the necessary food for the non-productive period



Brood being replaced with honey stores

Freedom from injurious diseases

Up to the mid 1980's American foulbrood was the greatest concern.

Hopefully your honey crop has been harvested and you have had a chance to inspect your hive.



Protection from extremes of temperature in the colder portions of the country.

3. One practice beekeeper do not do much of any more is wrap hives for winter. Most books included an entire chapter on this subject.

Packing maintains a more constant temperature within the hive, conserves heat generated by bees, and reduced the amount of food used in winter. But good ventilation must be maintained!



Nucs covered for winter protection

Practical Principles

Practical Principles



A minimum of enemies and other disturbing influences

Task include:

- 1) installing an entrance reducer to keep mice out of the hive.
- 2) Level the hive, raise the back a little to provide a gentle slope toward the entrance to allow water to drain out of the hive.
- 3) Make sure the hive has an upper entrance and good ventilation venting moisture out of the hive.



4. Contraction of the entrance, the comb space being reduced to that which the colony can cover well before clustering, and the number of combs being sufficient to hold an adequate amount of bees.

Snow is a good insulator. Note the snow on the top cover in the above hive picture!

5. Provide barriers to prevent wind damage, and keep entrances clear of water, sand, mud or ice and up off the ground.

Give hives good sunny windless locations and locate in an area with good early spring pollen sources.

Honey bees do fly during winter when the day time temperature are high enough to allow for flight. These flights are very important for hive health. It will be normal to see dead bees on the snow in front of hives during winter



Woods and tree lines are good wind breaks. Many beekeepers build fences or provide some form of barrier such as bales of straw to reduce wind. Placing a rock or a brick on the top cover will prevent covers from blowing off hives.

Practical Principles

Before mites

6. Re-queen every other year or when necessary.



After mites and CCD

- Re-queen those queens that arrived in the spring packages! Queens seem to fail much quicker than in the past -- many hives are started in the spring with packages and those queens usually do not survive northern winters very well.
- Efforts are being made to develop queens bred for local climate conditions and carry genetics for hygenic behavior. We are seeing the movement by many states to encourage beekeepers to re-queen with local queens.

Queens must be considered as one of the important factors in the success of overwintering a colony of honey bees.

Fall Management

Before mites

7. Complete a thorough colony inspection.

- Check hive health – looking especially for AFB.



After mites and CCD

- Complete a thorough colony inspection

Check hive health – Big change from the past however.

- AFB still important but a beekeeper must now monitor Varroa mite thresholds, check for Nosema *ceranae* & small African hive beetles. Then determine a plan for treatment if found.

What has changed: Since 1985/86 a number of pest have been introduced into the United States. These include: Tracheal mites, Varroa mites, Small hive beetles, *Nosema ceranae*, various virus and new threats including changing farming practices --more land put into cultivation, mono crops, big Ag Business, GMO's and chemicals. And more will be coming!

2013

**Check honey stores
(60 pounds needed) Most
hives not only made 100
pounds of surplus honey or
more, but could be depended
upon to gather a fall honey
crop and still have enough
honey to survive winter.**

**Check honey stores -- hives still
need 60 pounds of surplus honey to
survive winter.**

**However, surplus honey crops have been
declining since the 1990's rather
dramatically. For new beekeepers with
new foundation and new equipment –
bees will be lucky to store just enough
food to make it thru the winter and the
beekeeper often is required to provide
sugar syrup and pollen patties to
supplement what they do not gather.**



**Pictured is a hot room full of supers of Ohio
honey in 1999 showing just two days of
removing honey from hives. Sadly this
beekeeper is no longer in the commercial
beekeeping business**

Many reason have been mentioned –

- **But times have changed!** Small businesses have been replaced by big business – the often called Mom and Pop business have disappeared.
- For agriculture the small farm has been absorbed by large commercial farms.
- Gone are the small dairy farms replaced by mega dairy operations that milk 24 hours a day – the life of a cow has changed drastically – now raised in mega buildings with air conditioning, small loafing stables (cows don't see the sun), feed that is calibrated to provide the nutritional requirement for milk production, and when a cow's milk production begins to fail – the cow is replaced immediately.
- Crops are now mono culture – wheat, corn and soybeans. (Not much there for honeybees).

- Have you noticed the increase in urban beekeepers?
- A recent study surveyed several urban areas for the concentration of honey bee colonies within given areas. The study reported that the number of beekeepers/hives within the study areas exceeded the ability of the area to produce enough food for the bees to gather the essential food for survival.
- Thus the bees required feeding in order to survive.

And add to this the use of various chemicals by home owners and farmers that are designed to kill insects.

And throw in urban growth with the corresponding reduction of foraging land and plants available to honey bees.

Why less honey?

- **Methods:**

- Feed honey in the comb if you have it!
- Feed sugar syrup (2 parts sugar to one part water) while bees can still fly.
- If it is cold – putting liquid into the hive is not a good idea. In cold weather feed dry sugar, fondant, or a sugar candy.

It is becoming more important to feed pollen substitutes with sugar patties. Many brands are available and all can be of help – you can even find formulas to make your own.

- **There are many types of feeders.**



Boardman feeders used at the entrance can be used when weather is warm but are useless when the weather turns cold.

- **Division board feeders are placed inside the hive replacing a frame and usually placed against a side wall of the hive body.**
- **Top feeders of various design allow larger amounts of food to be given at any one time.**
- **One or two gallon buckets placed over the inner cover hole – quart jars will work as well.**
- **Candy boards of various designs and even plastic self sealing bags with holes cut into them.**

Not enough food – It is necessary to feed.

Mite levels in a bee hive reach their highest level in the fall of the year and often are responsible for what is called CCD. [Colony Collapse Disorder]

This is a problem that needed to be addressed much earlier – check out the material on diseases and mite control in the slide show.

CCD

It is a fact that many hives will starve even if there is honey in the hive. Make sure the food available is above and around the winter cluster.

A Dead Hive in February



You don't want to see your hive in this condition in the spring of the year.

And most important

Guide to a healthy hive

Outstanding queen + good hive nutrition + mite control + good management technique = the best chance at hive survival.

- **One:** Know the condition of all hives all the time. **Beekeeping is no longer – just put the bees out back and get to them when you feel like it. You need to open the hive and inspect its condition often.**
- **Two:** Deal with things you can do – **Monitor the mite levels in your hives and feed the bees if necessary.**
- **Uncap some drone brood to check pupa for Varroa mites.**
- **Use a sticky board to capture mites that drop off bees and check capped drone cells for Varroa mites.**
- **Know what food sources are available to your bees. Not all areas are equal for bee plants and some are over stocked. Finding a foraging location might not be an option.**

Start Fall Management earlier

A beekeeper can do a quick check for Varroa mites.



Sugar roll test - All you need is some powdered sugar and a jar to scoop some bees into. This does not kill the bees and will reveal a few mites if they are present!.

- **Why have I not mentioned Small hive Beetles and Chemical treatment for Varroa?**

- Small hive beetles are a problem much like wax moth. Strong hives seem to be able to control SHB and thus, they attack the weaker hives. If you have a small hive beetle problem, it is more likely a problem that should have been addressed far before you got to fall management. There are many traps to collect SHB and they are easy to use.
- Chemicals are widely used – and some beekeepers use them illegally. If labels are followed, chemicals introduced into the hive [remember that these chemicals are formulated to kill insects and doses are highly regulated to not kill the bees] should limit and help control Varroa mites. However, mites have built up resistance to some chemicals and misuse over the years have caused beekeepers to try one product after another to solve the mite problem.
- ***I can not make any recommendations because chemicals do not guarantee your hive's winter survival. Choices include: ApiLife Var, Mite Away quickStrips®, Apivar®, Apiguard, & Apistan Strips®.***

What happens if you do nothing!

Some honey bees are more resistant than other honey bees. Wild bees (feral colonies) do survive in trees and houses. However, how long they survive depends upon a number of factors.

I have spent over 25 years trying to find the perfect queen that is adapted to winter survival. I am still looking and if we look together, it might be possible that we will be able to find stock able to handle Varroa mites.

Figures of bee losses are published in the bee magazine in the spring and the trend has been that losses during the winter has been increasing sometimes reaching 50% of all colonies.

But if you do nothing and your bees do not have an adequate food supply, or a productive queen -- they are certain to not survive this coming winter!

• A list

- Fumigate stored equipment for wax moth if warm weather continues.
- Make sure all hives have good ventilation.

- **If cold:**

There is a danger of opening a colony to check or examine brood if bees are not flying from the hive. Wait until a warmer day to open the hive and pull frames to make sure honey stores are near the cluster of bees. This is most likely the most important thing you can do to save your bees from starvation.

- It is important that your winter hives have a good sunny, windless location, and that you make sure moisture-laden air in the hive can be ventilated out of the hive. If using an open screen bottom board, it is a good idea to make sure no drafts of air expose the colony to unnecessary air blowing up into the cluster. Many screened bottom boards have an insert for closing off the bottom of the bottom board. Use them if bee hives are located above ground level.
- Clean up and store away any equipment removed from the bee yard and order any package bees as soon as you are aware they are needed.