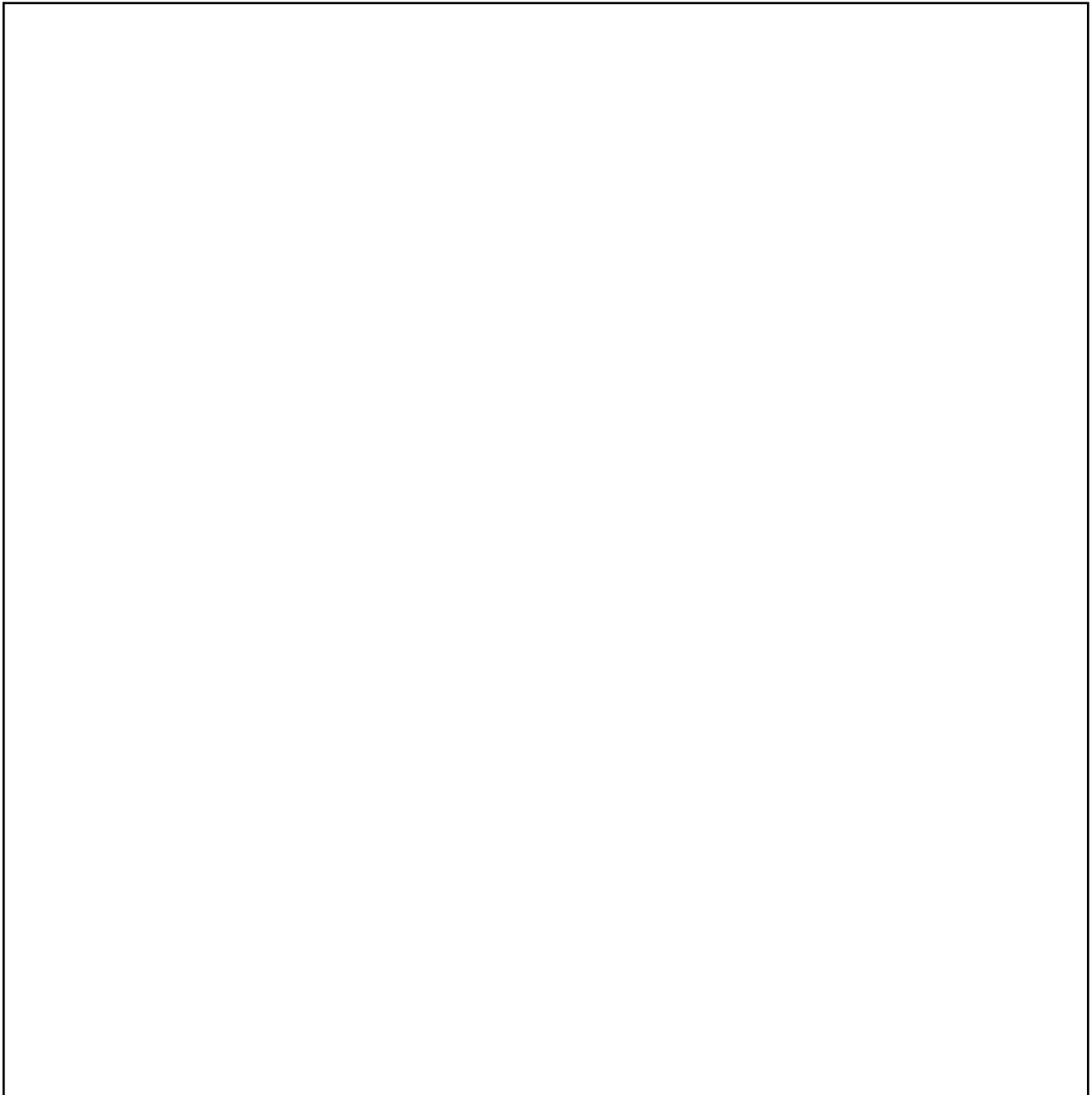


Seasonal Management Section Overview

Do your bees have enough honey stores for the winter? What about the dry summer? Are you ready for spring nectar flow and should you replace that old rotting super? Find out how the management of your bees changes throughout the year and how you can manage and monitor them through the seasons.

Class Notes



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Note for Seasonal Management

Please read this note before using the treatments recommended in any of *This Month in the Bee Yard* articles.

Keeping honey bees in North Carolina in 2010 is much more involved than it was 26 years ago before the tracheal mite and considerably more involved than it was 20 years ago before the varroa mite. The tracheal mite was first detected in North Carolina in 1984 and the varroa mite was first detected in NC in 1990. I, along with most of the other beekeepers in North Carolina, continued to keep bees by using various chemicals to control these two mites.

The tracheal mite is a parasite of the adult honey bee and it spends its entire life cycle (except for transferring to a new bee host) in the tracheal or breathing tubes of the honey bee. The tracheal mite can kill most or all of the adult bees resulting in the loss of the entire colony. I feel we have some good news on this mite. From my experience, damage from the tracheal mite during the past few years has been low.

The varroa mite (*varroa destructor*) is an external parasite, which attacks both adult bees and developing larvae. The varroa mite can also serve as vectors of several viruses that can kill bees. As noted in the NCSU Beekeeping Note 2.03, the varroa mite is the most serious pest of honey bee colonies worldwide.

According to Note 2.03, one method to control the varroa mite is to cover all the adult bees with fine dust particles such as powdered sugar. This dusting technique can be quite laborious but it requires no chemical pesticides. Very little data has been recorded on this research but one article using powdered sugar as a means of detecting and controlling varroa mites was the subject of a Doctoral Dissertation by Dr. Fakhimzaheh, University of Helsinki, Finland in 2001. Dr. Fakhimzaheh described the sugar dusting, in some cases, knocked down as many varroa mites as fluvalinate on package bees which was 87%. When the honey bee is covered with fine powdered sugar the varroa mites lose their grip and fall to the floor of the hive. The impact of dusting, according to this dissertation, was studied and it was found that no sugar was found inside the tracheal ducts of the bees involved in any of the treatments. Dusting had no adverse effect on the capped brood and the adult bees in the colonies. No queen supersedure occurred in the sugar treated colonies.

If you would like to use powdered sugar to control the varroa mite, you might want to try the procedure developed by Tom Dowda, Florida Bee Inspector. These directions were published in the November 2005 issue of the American Bee Journal and are included in the table on the following page. Dusting with powdered sugar involves no chemical pesticides and thus can be used at any time, even during a honey flow. Tom did mention a note that should be highlighted and that note is as follows: For best results, the hives should be placed on a 1/8-inch hardware cloth, (screened) bottom board, allowing mites to fall to the ground.

This section, Seasonal Management, also includes a Brood Inspection Checklist and twelve articles entitled, This Month in the Bee Yard, January through December. These articles can also be viewed on line at www.alamancebeekeepers.com .

I hope you find these monthly articles to be helpful in identifying the bee-related work that each of us should be doing to make sure that both the bees and the beekeeper are ready for what's ahead.

K. G. Pipes
November 17, 2009

This Month in the Bee Yard - January

There are many different techniques used in managing honey bee colonies. If you have a system that works for you, then keep using it. If you have a system that you would like to improve on, then read, talk to other beekeepers and study various other methods. The methods and suggestions outlined in these monthly articles are merely additional inputs that you may want to consider.

During the month of January, about the only thing that can be done in the bee yard is to check and make sure that the entrance reducer is still in place on each colony and that each entrance is open and not clogged with dead bees.

With nothing happening in the bee yard, this is an ideal time to order supplies, make repairs, assemble new equipment and get everything ready for the season ahead.

On a warm sunny day with calm winds, walk around the bee yard and observe the activity at the entrance of each hive. Examine more closely those hives with no activity. Close the entrance of any hive that has died out and check for brood diseases before moving that equipment to another hive for clean up. If the bees are flying and carrying pollen, then that colony is alive and most likely raising brood.

In my Bee Ready article in the November 2002 ACB Newsletter; I quoted a few words spoken by Tom Glenn of Glenn Apiaries during the EAS Meeting at Cornell University in August 2002. His words quoted from the October 2002 issue of Bee Culture were as follows: "The time has come, according to Mr. Glenn, for beekeepers to 'get off the pesticide treadmill.' the future lies in the committed, amateur beekeeper, who will no longer tolerate chemical treatment, and who must lead the way in the brave new world of 'stewardship' of honey bees through genetic selection for tolerance to pests and diseases." This article continued and a part of the next paragraph is as follows: "Beekeepers can facilitate selection in a number of ways, according to Mr. Glenn, who quoted the well-known saying, 'A small group of committed citizens can change the world.' They can help accomplish this by influencing the genetics of a bee population one hive at a time, as every colony is a possible participant. In addition, he urged those present to take up queen rearing themselves, for he said there is no better time than now to engage in an activity that is considered one of the most intricate and interesting the beekeeping craft has to offer."

In less than two months, a new year, 2010, will be rolling in and Tom Glenn is still doing his part at Glenn Apiaries in Fallbrook, California by continuing his selective breeding program. According to Glenn Apiaries web site, selection is the key to improvement in any breeding program. Selection means defining and measuring the most desirable traits, then sorting out the very best to breed from. Their selection priorities include: Resistance to Varroa mites, American Foulbrood, and Chalkbrood and is controlled in part by the "hygienic behavior" of the bees. Other traits that they select for includes tracheal mite resistance, solid brood patterns, gentle

temperament and high honey production. All of their queens are instrumentally inseminated and they do not sell naturally mated queens. The Glenn Apiaries web site is as follows: www.glenn-apiaries.com/catalog

Four of those queens are listed below and described in words partially gleaned from Tom Glenn's web site.

Minnesota Hygienic Italian Queens – These queens offer good resistance to American foulbrood, chalkbrood and some resistance to Varroa. They are gentle and excellent honey producers. Developed by Dr. Marla Spivak at the University of Minnesota.

Suppressed Mite Reproduction (SMR) Queens – USDA ARS scientists Dr. John Harbo and Dr. Jeffrey Harris have defined and tested this trait that suppresses the reproduction of the parasitic mite Varroa destructor. Recent studies by Dr. Spivak and Dr. Harbo have shown that the SMR trait might be best described as a “Varroa sensitive hygienic behavior”. VSH/SMR bees remove mites that have started to reproduce. The reproduction of mites triggers their removal by the bees. The only mites left in the cells are non reproductive or sterile.

Cordovan Italian Breeder Queens – The cordovan gene changes black body parts (head, thorax, bands) to reddish brown. It is a color variation rather than a race of bee. The abdomen is golden yellow to the tip. Their bright color makes them the easiest queen to find. According to the Glenn's Queen Comparison Chart, the cordovan has the lowest honey production, the lowest Varroa resistance and the lowest tracheal mite resistance but the highest marks for gentleness of the five different queens that are compared. Glenn Apiaries has crossed the cordovan bees with VSH bees to enhance their Varroa mite resistance.

Carniolan Breeder Queens – These bees are known for their winter hardiness and rapid spring build up. They are excellent honey producers and comb builders. They have proven to be exceptionally resistant to tracheal mites. This is Glenn's darkest colored line of bees. Glenn Apiaries has also crossed the Carniolan bees with VSH bees for enhanced resistance to Varroa mites.

Russian Varroa Resistant Queens – USDA scientists have imported a strain of honeybees from Russia, which are naturally resistant to Varroa mites. The imported queens were selected from bees, which had been exposed to mite infestation for more than 150 years. Dr. Thomas Rinderer is Research Leader of this team. Glenn Apiaries will not be selling Russian Breeder Queens in 2010.

This Month in the Bee Yard - February

The first hive examination can usually be made in late February. Select a bright sunny day with calm winds and a temperature of at least 60°F for this check. This first check should be kept brief so that the brood will not be chilled. Those items that need to be checked are listed as follows: 1) check that the hive still has adequate upward ventilation, 2) evaluate the food stores and 3) check for brood and bees.

1) Check that the hive still has adequate upward ventilation. If there is no moisture found on the underneath side of the inner cover, that hive has adequate ventilation. If moisture is found during this check, put slightly larger spacers or shims on the topside of the inner cover. This will vent more of the warm moist air to the outside instead of forming moisture on the inner cover. This moisture becomes a problem when it drips back onto the winter cluster. The inner cover must have an open center hole for this method of ventilation to work.

2) Evaluate the food stores. If the bees are still clustered in the brood chamber and the super is still mostly full of honey, the food stores should be adequate for now. If the bees are clustered in the top super, check and make sure that they have at least fifteen pounds of reserve honey. Using three pounds for a shallow super frame full of honey and five pounds for a deep frame of honey can be used to make an estimate of the honey stores. If the colony has less than the above-recommended fifteen pounds of reserve honey, then they should be fed. The easiest way to feed a colony of bees is to transfer a few frames of honey from another hive that may have more honey than they need. Another way to feed the colony is to feed sugar syrup. For spring feeding of sugar syrup, mix one part sugar and one part hot tap water. Use an inside feeder such as a jar or pail with four small holes in the center of the lid. Frame nails are ideal for making these holes. With only a few small holes in the feeder lid, it will be less likely to leak out and flood the cluster during night and day temperature/pressure fluctuations. Place the feeder over the hole in the inner cover or on top of the brood frames directly above the cluster of bees. Then place a super or a hive body over the feeder. Be sure and maintain the opening at the top of the hive for upward ventilation. An outside Boardman (entrance) feeder is not recommended in cold weather because it is too far removed from the cluster.

3) Check for brood and bees. Remove one frame at the edge of the cluster and move each frame over as you work toward the center of the cluster. When you get to a frame covered with bees, check for eggs or brood. If eggs or brood are spotted, the queen is alive and laying. It is not necessary to actually locate and sight the queen during this initial check. This is about all that can be determined from this early check. A more thorough evaluation of the colony can be made next month when there should be more brood and the temperature, hopefully, warmer.

Beekeeping supply catalogs are a good source of information and they will be most helpful if and when you decide to order a few supplies. Seven beekeeping supply companies are listed below along with their address, telephone number and their web site. If you plan to order any beekeeping supplies, it is recommended that you go ahead and request your catalogs early so you

can have time to review and study what each company offers and then compare prices before you finally place your order. The seven beekeeping supply companies are as follows:

Betterbee, Greenwich, NY
www.betterbee.com • 800-632-337

Dadant and Sons, Inc, Hamilton, IL (local Branch: Chatham, VA)
www.dadant.com • 800-220-8325

Mann Lake Supply, Hackensack, MN
www.mannlakeltd.com • 800-880-7694

Miller Bee Supply, - North Wilkesboro, NC
www.millerbeesupply.com • 888-848-5184

Rossman Apiaries, Moultrie, GA
www.gabees.com • 800-333-7677

This Month in the Bee Yard - March

On a warm, sunny day with calm winds, preferably during the early part of the month, thoroughly check each colony. The items to be checked are as follows: 1) Evaluate the food stores, 2) check the amount of brood and the brood pattern and 3) write down your findings.

1) Evaluate the food stores. Most likely during this time of the spring build-up, the bees will be clustered in the top super or top brood chamber. Wherever they are located, check and make sure that they have at least fifteen pounds of reserve honey. If the colony has less than this fifteen pounds of reserve honey, then they should be fed. Feed according to the recommendations listed in the February article.

2) Check the amount of brood and the brood pattern. By early March, a normal colony with a good queen should have several frames of brood. The exact number will depend upon the amount of honey they have, the amount of pollen they have and of course the size of the cluster. As the frames are being moved, note the pattern of the brood. Dr. Roger Morse (1990, ABC and XYZ of Bee Culture, 84) suggested that the best way to evaluate a queen is to observe the pattern of eggs, larvae and pupae on a frame in the brood nest. "A queen with a good brood pattern has brood of the same age adjacent, that is, eggs should be next to eggs, larvae next to larvae of the same age, and pupae next to each other in the same manner." Dr. Morse (1983, A Year in the Bee Yard, 58) further explains that every cell in the brood nest will not be filled with eggs, larvae or pupae but preferably 90 percent or more should be filled. "Cells may be empty for a variety of reasons, but when empty cells appear in large numbers, the colony should be checked first for disease and then for starvation. If these are ruled out, the blame is put on the queen and she is replaced. Queens can fail for a great variety of reasons, including disease, improper mating, old age, poor nutrition, physical handicaps, and so on, and it is often difficult or even impossible to determine which of these is the problem."

It is also a good idea, as each brood frame is moved, to check the condition of the comb. If the comb is bad and contains a lot of drone cells, it should be removed. If the comb to be removed contains more than a few cells of brood, it should be moved to the outside of the cluster. It can then be exchanged with a frame of foundation or drawn comb after the brood emerges.

3) Write down your findings. It is a good idea to keep a log or record on each of your colonies. Record data such as the date the colony was requeened, source of the queen, was the queen marked or clipped. After working with a particular hive, write down what you did and what you saw. Record any thing that may be of interest at some later date.

After the above checks have been completed, our next goal is to have all colonies at full strength around the middle of April in time for the tulip poplar honey flow.

George W. Barkley in his booklet, *Beekeeping in Forsyth County*, noted: "It is unfortunate for us that the poplar trees, which are our main source of honey, bloom so early. If they bloomed a month later the colonies would have more time to build up and we would get a lot more honey."

Possibly one way to get our colonies to build up earlier would be to follow a procedure recommended by The Rev. Lorenzo Lorraine Langstroth in (1853, *Langstroth on the Hive and the Honey Bee*). Rev. Langstroth recommended feeding early in the spring, after the weather has turned favorable, in order to stimulate early brood rearing. "I always feed my bees a little, even if I know that they have enough and to spare. There seems to be an intimate connection between the getting of honey and the rapid increase of breeding in a hive; and the taste of something sweet, however small, to be added to their hoards, exerts a very stimulating effect upon the bees. A few spoonfuls a day will be gratefully received, and will be worth much more to a stock of bees in the spring than at any other time."

Dr. Keith Delaplane (1993, *American Bee Journal*, 133-7, 471) identified the dilemma that most of us face at this time of the year as follows: "The goal of honey production management is to have hives at full strength immediately before the major nectar flows. If colonies reach full strength too early, they might swarm. If they are still growing during the nectar flows, bees convert the nectar into population growth instead of honey for the beekeeper. This means you must learn the nectar flows of your area and time all beekeeping activities with that calendar in mind."

For those of you that are not familiar with the name L.L. Langstroth, he was the father of modern beekeeping. In 1851 he observed the bee space, in 1852 he patented his movable frame hive, the design that most of us use today, and in 1853 he published his well-known book that was referred to earlier. In his book, Rev. Langstroth referred to our favorite honey-producing tree as one of the greatest in the world. "The tulip-tree, *Liriodendron*, is probably one of the greatest honey-producing trees in the world. In rich lands this magnificent tree will grow over one hundred feet high; and when covered with its large bell-shaped blossoms of mingled green and golden yellow it is one of the most beautiful trees in the world. The blossoms are expanding in succession, often for more than two weeks, and a new swarm will frequently fill its hive from these trees alone. The honey, though dark in color, is of a rich flavor. This tree has been successfully cultivated as a shade tree even as far north as southern Vermont; and for the extraordinary beauty of its foliage and blossoms it deserves to be introduced wherever it can be made to grow. The winter of 1851-2 was exceedingly cold, the thermometer in Greenfield, Mass., sinking as low as 30 degrees below zero, and yet a tulip-tree not only survived the winter uninjured, but was covered the following season with blossoms."

This Month in the Bee Yard - April

April, this is the month most beekeepers in the Piedmont area of North Carolina have been waiting for. The tulip poplar trees will start blooming around the middle of the month and then the blackberries will start blooming about a week later. The poplars started blooming on April 18th in 1995 and on April 17th in 1994. George W. Barkley in his booklet, *Beekeeping in Forsyth County*, wrote: "The earliest I have known the poplars to bloom was April 10th in 1977, the latest, April 29th, another year." So for planning purposes, we should have all equipment in place and our bees ready for the nectar flow by April 15 (just in case).

Before starting the April checks, you should have a queen excluder and at least two extracting supers available for each hive.

Again in the early part of the month, check each colony as follows: 1) Evaluate the food stores, 2) remove any chemical strips that have been added, 3) check and equalize the brood, 4) place the queen excluder above either the second shallow super or above the second brood chamber. The extracting supers are placed on top of the queen excluder and 5) remove the entrance reducer.

1) Evaluate the food stores. Check and make sure that each colony has at least fifteen pounds of reserve honey. If the colony has less than the above-recommended fifteen pounds of reserve honey, then they should be fed. Steve Taber (1980, *Bee Behavior*, *American Bee Journal*, 120-8, 565) put it very nicely when he wrote the following: "The problem of wintering your bees is not over until the honeyflow has started in the spring. Read that sentence again; it's really important."

2) Remove any Apistan or Checkmite+ strips as well as any other chemicals that have been added. Both of these strips are used to control the Varroa mites. The Apistan strips are impregnated with fluvalinate (a contact pesticide) and the Checkmite+ strips are impregnated with coumaphos. Coumaphos is a member of the organophosphate group of pesticides. The residues can accumulate in wax and be harmful to bees if at high levels. Thus these strips need to be removed before adding any supers that are to be used for human consumption.

3) Check and equalize the brood. Brother Adam (1987) used equalization as a method of management and he described it as follows: "Equalising means attempting to establish all colonies throughout the apiary or apiaries at the same level of strength, so that at a given date in early spring all the colonies will be starting the season on a footing of equality." He also wrote that during the first spring inspection, "A note is made of the number of combs each colony covers and from these notes the overall average strength is assessed. Thus, we know in advance which colonies are in need of help, the exact amount of help they require, and at the same time which of the colonies can give up combs of bees and brood." Brother Adam, a monk at Buckfast Abbey, Devon, England, was the head of the monastery's internationally famous bee department for 73 years (1919 - 1992). It was during that period that he developed the Buckfast bee. The

Buckfast bee is significant because it appears to have some degree of resistance to the tracheal mites.

Equalizing the brood is quite labor intensive but it is a good system that will help the weaker colonies by giving them more bees and at the same time will help to control swarming by reducing the number of bees in the stronger colonies. Unfortunately, this system will only work if you have more than one colony. A frame of mostly sealed brood with adhering bees is moved from the strong colony and exchanged with an empty comb from the weak colony. Before any frames are transferred, the queen should be located and set aside. Also only move that amount of brood that the weaker colony can keep warm. If both the strong colony and the weak colony are in the same yard, you must keep in mind that most of the older bees will return to the parent colony and will not be available to help keep the brood warm in the weak colony. Even though you move brood and bees, there is no way to predict how many adult bees will remain.

After all of the brood and bees have been moved, return the queens to their respective hives.

4) During the last four or five years, I have tried to give each hive either two shallow supers above their brood chamber or give them a second brood chamber. These shallow supers are "their supers" and are always a part of that hive. None of these frames are ever extracted. I use a queen excluder on each of my hives from April through October. For most hives, the queen excluder is either placed above the second shallow super or above the second brood chamber. The extracting supers, normally two, are placed on top of the queen excluder. Supers with new foundation should not be added at this time. Wait approximately two days after the nectar flow starts and then add one super only with new foundation to a hive (with no extracting supers).

The supers noted above, as "their super" are always a part of that hive and none of the frames are ever extracted. They serve both as a food chamber and as a brood chamber. It is used, most of the time, as a part of the colony's food source but is used for brood in the early spring before the queen excluder is put in place. As this early brood emerges from "their super" (now above the queen excluder), the bees will fill these cells up with honey that the colony will then have for their winter stores. With "their super" now above the queen excluder and the queen below, it will be necessary to check this super for queen cells in five or six days. Sometimes a strong colony will start queen cells above the queen excluder even though the colony has a laying queen in the brood chamber below.

If you plan to start with new foundation, be sure to use ten frames in order to get these frames drawn out with a minimum of burr and brace comb. After the center frames are well started, move the four outside frames to the center and the center frames to the outside. Switching the frames around in this manner will encourage the bees to work on all ten frames simultaneously instead of working only on the center frames. This is especially helpful if the colony is a little weak or if the temperatures are on the cool side. If you would like to get near perfect combs,

reduce the number of frames to nine when all of the combs have been drawn out and about half filled with honey. Nine combs, when filled with honey, will result in thicker combs that are easier to uncap. These combs, when extracted, will be some of the best combs that can be made. Also this is a good time to add a second super of foundation. Place this new super of foundation either under the first extracting super or under the super of new foundation that is mostly drawn out.

5) And finally, remove the entrance reducer. The entrance reducer can normally be removed early this month. However, if unusually cold temperatures are in the forecast, just delay the removal a few days.

After the colony has built up for the nectar flow, then the next big concern is swarming. Most swarming takes place in our area during April and May. Swarming should be prevented, if at all possible, because a colony that swarms will produce little or no honey. The cause of swarming is normally associated with a crowded brood nest but Richard Taylor (1992) identifies the cause of swarming as follows: "What causes a colony to swarm is, primarily, its becoming congested with brood, not with bees. The way to keep swarming down, therefore, is to keep what is called an 'open brood nest', that is, one in which there are always plenty of empty cells in the center for the queen to lay in. The hive can become as populous as you like, so populous that the bees are not only occupying the supers but even hanging out on the front of the hive, and they are still not likely to swarm if there is empty, broodless space right in the center of the brood nest."

Dr. Taylor proceeded to explain how to obtain an open brood nest. "And the way you get that, of course, is to replace the combs that are full of brood with empty ones, or with foundation. More precisely, you take out two or three or four combs of brood from the center of the brood nest - three are about right - and replace them with empty drawn combs or frames of foundation. It goes very much against the instincts of the bees to swarm when there is that kind of emptiness in the middle of the brood nest. They want to get that filled up with brood first. So, having made that exchange of empty combs for brood, you repeat the exchange in another ten days or so, to make sure that open brood nest is preserved."

The brood and bees that are removed may be given to a weak colony, as they were during brood equalization, or they may be used to start additional hives or nucs.

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This Month in the Bee Yard - May

About once a week, check each hive and determine where the bees are working. If one colony is working in their third and top super and another colony is only working in the bottom of three supers, shift the supers around. This is sometimes called equalizing the supers. Move a super from where it is not being used to a hive where it will be used. Add another super when the bees begin working in the top super. If the super to be added is drawn comb, it may be placed on top of the other supers. If the super to be added is foundation, it should be placed above the queen excluder and below all other extracting or foundation supers. Toward the end of the month, add an additional super only after the last super added is mostly capped. When the nectar flow stops, remove any unused supers of foundation. This will prevent the bees from chewing and damaging the new foundation, as they will do, when no nectar is available.

If the supers of new foundation are to be used for comb honey, then these supers should be removed as soon as all frames are fully capped. If left on the hives, the combs will become travel-stained as the bees walk over the dark brood combs and then track pollen and propolis onto the new white cappings.

Before any supers of comb honey are removed, check and make sure that all cells are capped. If all cells are not fully capped, delay the removal a few days. Unsealed cells may contain unripe honey with high moisture and could cause the honey to ferment if removed.

Once a super of comb honey is removed from the hive, put it in a plastic airtight bag and place it in a freezer for two or three days. The plastic bag prevents moisture from forming on the honeycomb while the exposure to the low temperature of 0°F in the freezer will kill all stages of the wax moth. The super of comb honey can then be removed or it may be stored in the freezer for several months. When the super is removed from the freezer, the honey should be allowed to thaw at room temperature before the plastic bag is opened.

Last month I cited an article written in 1992 by Richard Taylor where he identified the cause of swarming. In 1995, Richard Taylor again addressed that same subject and I will let his words explain the reason for it being repeated. "The basic cause of swarming I have mentioned many times, but it is still so insufficiently appreciated that it bears repeating. The one thing which, more than anything else, precipitates swarming is congestion of the BROOD nest. It is not congestion, that is, overpopulation, of the hive itself. When the hive gets so full of brood, pollen and honey that the queen can find no combs in which to lay, then the bees build queen cells, no matter what precautions you have taken. At the same time, there are other factors, such as the age of the queen, so really effective swarm control involves more than just keeping an open brood nest."

Supering at the right time can also have an impact on swarming. Dr. Taylor had this to say on the subject of supering. "Right now I am making the point that if you are late supering, then you

are going to get swarms, because that nectar is going to go into brood combs and make them unavailable to the queen for egg laying."

Last year during the 2005 honey flow; I decided to keep an "open brood nest" in all 19 of my overwintered colonies to test Dr. Taylor's idea of swarm control. This effort started around the middle of April. The first step in each of these checks was to find and cage the queen. The next step was to remove all frames with brood, except one. Their single brood chamber was then filled back with empty but drawn frames and the one frame of brood in the center. The queen was then released on the single brood frame. The queen excluder, "their super" and two extracting supers were placed, in that order, on top of the brood chamber.

As the brood frames were removed, most of the bees were shaken or brushed off but that depended on the strength of the colony receiving the brood frames. Near the end of this first round of checks, a few of the stronger colonies had to be used to hold the extra brood frames. Some of the hives were holding four and five deep supers of brood frames. Later as more bees emerged, new colonies were started by using queens from overwintered nucs thus relieving the problem of what to do with all of the extra brood frames.

Between the 2nd and 3rd week after completing the first round of checks, all hives were again checked. This series of checks involved removing all of the supers, now quite heavy with fresh honey, and then searching brood chambers packed with bees looking for the queen. During this second check only three or four frames with brood were removed from the center of the brood nest. Lifting the supers off and back on again and searching for the queen in each colony was quite labor intensive, time consuming and took more than a week to complete. As the honey flow came to an end, I am satisfied that none of my colonies had swarmed.

A couple of weeks after the checks had stopped and the honey flow was over, one colony did swarm. This swarm was a small one and it too, most likely, could have been prevented if a third check had been made to keep an "open brood nest" in each of the colonies.

As I noted in the November 2005 news article for the Alamance County Beekeepers Newsletter, this limited test of Dr. Taylor's "open brood nest" is a worthy idea in controlling swarming and it is good to know but the process is quite involved and is too time consuming to be of any practical value to the average beekeeper.

If you find that one of your strong colonies has somehow slipped through your checks and has begun swarm preparations, you may want to try a procedure known as shook swarming. In this procedure, a swarm is artificially created by shaking all of the bees from the combs of a strong colony and crowding them into shallow supers of foundation only. It is a procedure used primarily in making comb honey but I have used this method with great success to absolutely stop a swarm.

To create a shook swarm, proceed as follows: Move the parent colony to one side. Locate and cage the queen. Place a new bottom board on the original location and add a shallow super with

nine frames of foundation and one frame of brood. Check and make sure there are no queen cells on this one frame of brood. This shallow super will serve as the new brood chamber. Upon this shallow super, place a queen excluder and then one or two shallow supers of foundation. Use an inverted hive cover and support it in front of the newly formed hive. This hive cover will provide a convenient platform, onto which the bees can be shaken, plus it will serve as an easy walkway up to the entrance of the new hive. Place the caged queen on the bottom board near the entrance and shake all of the bees from each of the frames of the original hive on to this inverted hive cover. After all of the bees have been shaken from the original hive, push the queen cage in the bottom entrance with the screened side up and position it near the frame of brood. Smoke the bees occasionally to keep them moving instead of clustering at the entrance. Place all of the brood frames and super frames on other hives but make sure the colony receiving the frames have enough bees to care for the added brood. It is also suggested that all of these frames be checked for queen cells and those that are found be torn down.

If a large number of the bees are still clustered on the front of the hive, after they have begun to work the next day, then add another super of foundation. The queen can be released in a couple of days after they have started drawing comb in the bottom super which, as stated above, is their new brood chamber. I also recommend that you remove the frame of brood at this time and replace it with a frame of new foundation.

This is a good way to prevent a swarm, make more honey and end up with some beautiful extracting combs. The procedure is very labor intensive though. The labor involved in the initial setup was described above but more labor is also involved later. At the end of the nectar flow, the original hive body will need to be returned to this colony and the shallow super brood chamber should be moved above the queen excluder.

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This Month in the Bee Yard - June

If you are planning to move your bees to the mountains, then you may be able to produce a second honey crop. Some areas in the mountains have both basswood and sourwood trees and each produces an excellent quality honey. According to the NCSBA Calendar, the basswood trees start blooming in the mountains on June 20 and they last 23 days. The sourwood trees start blooming in the mountains on June 25 and they last 25 days.

George W. Barkley in his booklet, *Beekeeping in Forsyth County*, made the following recommendations when moving bees for the sourwood honey flow:

"If you take your bees to the mountains, you will need to make special preparations. Two or three days before taking them, remove all of the old honey supers, and put them on other hives you are not going to take -- if any. If you can't do this, these supers must be protected from the wax moth until you bring the bees back. Take the strong colonies. Put two supers of comb - extracted or new foundation, on each hive, and fasten a screen across the top of the hive. All parts of the hive must be stapled together.

On the morning you take the bees, you will have to close the entrance before the bees start flying at daylight. In hot weather, there will be a lot of bees on the landing board and the front of the hive. Fill a plastic spray bottle with water and spray the bees lightly. This will cause most of them to go into the hive. Smoke the rest, lightly, until they go in, then close the entrance with a screen. A warning -- never work bees in the dark unless it is necessary -- then have on plenty of clothes, for the bees will crawl all over you and they will not hesitate to sting.

Avoid jarring the hives when you load them. Do not stop until you reach your destination. While moving, the bees will stay quiet. If you stop, they will try to get out and the temperature in the hive will rise and the bees might smother. Turn them out as soon as possible after you arrive.

It is important to get the bees to the Sourwoods at exactly the right time. If you take them too soon, they will gather nectar from the weed blooms, and if you get them there even a few days after the Sourwoods start to bloom, you will lose a lot of honey.

The Sourwood honey flow seldom lasts more than three weeks. When the flow is over and you have taken the honey off, bring the bees back as soon as possible. If you leave them up there for a few weeks, they may starve.

Usually one super to each hive is enough when bringing the bees back."

I have moved my hives to the mountains several times and for the most part the above recommendations were followed. One change that I would recommend is to use a ratchet hive strap to hold the hive together instead of using staples. The hive strap is easy to use and it does not damage the woodenware like the staples do.

This Month in the Bee Yard - July

Whether your bees stayed here or you moved them to the mountains for the sourwood honey flow, you should still be able to remove the surplus honey this month.

Before any honey supers are removed, check the last supers that were added to determine if most of the frames are capped. Some beekeepers recommend that a super not be removed until 80 – 90% of the frames in that super are capped. Others use a guide of 60%. Another check that is used by some beekeepers is to hold the frame horizontally and give it a shake. If nectar or unripe honey falls from the cells during the shake, the moisture content is too high and that honey should not be extracted as it will most likely ferment. Ripe honey (capped honey) will normally have 18.6 (or less) percent moisture. Honey that is extracted with moisture content of more than 18.6% will most likely ferment while in storage.

If the honey flow is still on in your area, you may not want to remove any surplus honey at this time.

As you make plans to remove the surplus honey, check and make sure that you have an extractor, some form of uncapping tank, strainers, a means of filtering the honey, uncapping knife, buckets and maybe even a settling tank. The extracting room and all of the equipment should be ready and clean prior to actually removing the honey. This is because the wax moth larvae will appear on the honeycombs in a few hours after the adult bees have been removed from the supers. So until you are actually ready to start extracting, leave the supers on the hives and let the bees care for the honey.

Once you have started extracting and finished for the day, it is a good idea to return all of the wet-extracting supers to your stronger colonies. A strong colony can be given as many as five supers and, if there is no further nectar coming in, these supers will be completely free of any honey in two or three days.

After you have finished extracting and the bees have cleaned the supers, all supers should be protected from the wax moth. One method to kill the wax moths is to seal each super in a garbage bag and place it in a freezer for approximately two days. The freezer should be set for a low temperature of approximately 0°F. Another method is to stack the supers and treat with PDB – Para dichlorobenzene (Para-Moth crystals). Recent literature, however, is recommending against using PDB because it is causing contamination of the wax in the supers being stored.

All of the equipment should be washed, dried and stored for another year. The best way to clean the bigger items is to take them outside and spray generously with water. If you select a good sunny day, they can be wiped with a damp towel and then dried in the sun in a matter of minutes. They can then be stored, ideally in a plastic bag.

After the cappings have drained for a couple of days they should be washed and again drained. The cappings can then be melted in a solar wax melter, if you have one, or they can be melted in a large pan on an electric stove. If the wax is to be used for candles, Dr. Robert Berthold (1981, *Gleanings in Bee Culture*) had the following recommendations: "In order to produce a top quality candle that burns cleanly with a minimum of dripping, sputtering, and smoking, it is necessary to make sure the wax is completely free of contaminants such as honey and propolis. A number of things can be done to help achieve this. By using wax rendered from cappings, the propolis problem is reduced. If the cappings are then washed repeatedly with cool water to remove the residual honey, a light colored beeswax will result. After then fine filtering . . . the wax should be boiled in water for 10 to 15 minutes We have found that no matter how clean the wax appears, only the boiling in water will completely free it of unwanted contaminants."

Four or five years ago it was common practice to treat for mites, according to the calendar, with no regard for the number of mites in a colony. But in recent years it is recommended that you first check the colony to determine if the mite level justifies treatment. Late July or early August is an ideal time, after the honey supers have been removed, to check for these mites.

Check for varroa mites - it is recommended that one or more colonies be checked to determine if you have varroa mites. One simple and easy way, at this time of the year, is to check any brood that is exposed when burr comb is broken as a super or a second hive body is removed. Lift out the pupae and check to see if any varroa mites are present. If no burr comb is broken, locate a patch of drone brood and lift out the pupae and check to see if any varroa mites are present. If any mature varroa mites are present on the white pupae they will stand out because the mites are reddish-brown in color and are about the size of a pinhead. As the frames are being moved in search of drone brood, one may also check for any adult bees that have damaged wings. The severely damaged wings (or those with stubs for wings) were damaged by the varroa mites while the honey bee was a developing larva and pupa.

Though the above two checks may show that a particular colony has varroa mites, neither method can be used to determine if the mite count is sufficiently high to justify treatment. A check that can be used to determine if a colony should be treated is the Sugar Roll Test and that method is given below.

The Powdered Sugar Roll Test for varroa mites: Brush or shake 300 adult bees (approximately 1.5 inches of bees) from the center of the brood nest into a plastic 28 oz. peanut butter jar. The normal lid is partially cut out and a circular section of #8 hardware cloth is glued to the inside of the top. A teaspoon of powdered sugar is placed into the jar through the screened top. Roll the jar around for two or three minutes to distribute the sugar. Allow the jar to sit for a few minutes. Invert the jar and shake over a pan of water. Roll and shake again. The screen retains the bees but lets the sugar and any mites come out where the sugar is dissolved in the water and the mites float and can be easily counted. The advantages of the sugar roll test are that it is simple and the

bees are not killed as they are in most of the other tests. If you see more than 10 varroa mites, then you should treat that colony.

Check for tracheal mites: The tracheal mites are too small to be seen with the naked eye but one can identify a colony with a high infestation of tracheal mites by checking on the ground for crawling bees. Crawling bees can be an indication of other diseases but also can be a sign of tracheal mites and/or varroa mites. Examine several of the crawling bees up closely. If the crawling bee has unhooked wings, tracheal mites damaged that bee. If the crawling bee has no wings or only stubs for wings, varroa mites damaged that bee.

For control of varroa mites: Apistan, the trade name for fluvalinate is sold in plastic strip form and is effective against varroa mites. One Apistan strip is recommended for each five or fewer combs of bees per deep brood chamber. Thus two Apistan strips would be required for each deep brood chamber. The Apistan strips should be left in from 42 days minimum to 56 days maximum. Remove all Apistan strips after eight weeks (56 days) or prior to adding supers that are to be used for food. It is a good idea to keep a log on each colony. Log the date the strips were placed in the hive and maybe even a reminder as to when the strips should be removed.

Most beekeepers used Apistan strips for a number of years to help control the Varroa mites but when those strips were no longer effective in controlling the Varroa mites a stronger chemical was made available. These strips are called Checkmite+, the trade name for Coumaphos. Like Apistan, it is sold in plastic strips and is effective against Varroa mites but also effective against the small hive beetle. This product should only be used as a last resort – when fluvalinate-resistant mites are present and identified by your local NCDA bee inspector. Coumaphos is a more dangerous chemical than fluvalinate. Coumaphos is a member of the organophosphate group of pesticides and in 2001 its sale in North Carolina was restricted to those individual who had a Pest Control License.

For control of tracheal mites: Menthol is the only chemical registered and available for use in a bee colony to control tracheal mites. The normal method is to treat each colony with 50 grams (1.8 oz) of menthol crystals in a screened packet on the top-bars above the brood nest. An alternate method that produces better vaporization, is as follows: Items needed to treat 6 standard hives – 2 each 50 gram (1.8 oz) packets of menthol, 1 level cup of Crisco Vegetable Shortening and 6 to 8 blue shop towels (these are heavy duty shop towels and are available at Advance and Wal-Mart). Use 1 level cup of Crisco, heat the shortening and then add two packets of menthol. (The cup of Crisco weighs approximately 7 oz. and the menthol weighs 3.6 oz., thus the mixture is roughly 2 to 1, oil to menthol). Remove 6 of the blue towels and cut them in two. Roll these 12 half-towels together and place them in the heated oil/menthol mixture. (This combination of oil and menthol usually saturates between 13 and 16 half-towels.) After the towels are completely saturated, place them in a Ziploc heavy-duty freezer bag and seal it up. (A canning quart jar with a good lid can also be used.) They can be held for over a year if placed in a freezer. The treatment involves placing a half-shop towel saturated with oil and menthol directly on top of the brood frames. Menthol vapors can be detected almost

immediately from the front of the hive. Ten days later repeat this treatment. It is not necessary to return to the hive and remove the spent towel as the bees chew the towel into small pieces and carry them outside the hive.

Non-chemical control of tracheal mites: One non-chemical control of tracheal mites is to use a grease patty. A grease patty is made by mixing one part Crisco vegetable shortening with two parts granulated sugar. Use about 4 oz of the mixture and make a pancake size patty for each colony. The patties can be made up ahead of time and, with each patty on a sheet of wax paper, stored in the freezer until needed. To use, place one patty on the top bars directly over the cluster. The grease patty seems to help in tracheal mite control by interfering with the transfer (spread) of mated tracheal mites from their old bee host to a new bee host.

Several new products are now being sold in 2009 that are advertised as offering good Varroa mite control yet safe for the bees as well as the beekeeper. They are not mentioned in this monthly report because I have no experience with any of these newer products. I lack the experience because in 2001 I stopped using all chemicals. Now over eight years later I still use no chemicals, no menthol, no grease patties and no new, all natural and safe treatments. I have, however, been experimenting with various queens that have been selected to have some resistance to Varroa mites. This is a slow process and my losses have ranged from a low of 24.0% to a high of 86.6% during this eight-year period. Still I feel that resistant stock over time will ultimately solve the Varroa mite problem. I do have one recommendation though and that is to not use Apistan or Check Mite+ strips in your hives to control Varroa mites. The fluvalinate from the Apistan strips and the Coumaphos from the Check Mite+ strips are both causing contamination of the wax and this contamination is causing a significant negative impact on the queen's health as well as causing significantly reducing sperm viability of the drones.

This Month in the Bee Yard - August

August, this is the month that colonies typically start collapsing due to varroa infestation. Frequently, these were strong colonies in July but dead by September. As the amount of brood rearing in the colony slows, the varroa mites have fewer and fewer cells in which to raise their young thus the mites per brood cell soon overwhelm the colony and it dies. Next comes the robbing and then the wax moths destroy what's left. This is the scenario that frequently occurs if colonies are not treated. So if you checked your colonies for varroa mites last month and no treatments were needed, you should be in good shape for the coming fall and winter. If, on the other hand, you did not check or treat any of your colonies last month, it is recommended that you check early this month and treat if needed. The details of these checks and treatments were given in the July article and thus will not be repeated this month.

While working in the brood chamber, check and make sure that the cells above and to the sides of the brood are filled with honey or sugar syrup. If not, that colony should be fed. Use some type of inside feeder such as a hive top feeder. This type feeder is ideal and it holds approximately 2 gallons of sugar syrup. It is also a good idea, as each brood frame is removed, to check the condition of the comb. If the comb is bad and contains a lot of drone cells, it should be removed. If the comb to be removed contains more than a few cells of brood, it should be moved to the outside of the cluster. It can then be exchanged with a frame of foundation or drawn comb after the brood emerges.

There is a problem opening a hive during periods of dearth or limited nectar supply and that problem is robbing. So during these August checks, be particularly careful and minimize, as much as possible, the exposure of any combs containing honey. If you are feeding a newly established colony, feed late in the evening and try not to spill any honey or sugar syrup. Once started, robbing bees can destroy a weak or newly established colony in a matter of minutes and as they say, the best control of robbing is prevention. One good way to cut down on the exposure is to place any combs removed in a spare hive body where the bottom entrance is closed and the top covered with something light such as a piece of plywood that can be easily moved.

August is also a good time to check that each colony has a laying queen. If you find that you have a bad queen or no queen at all in a colony, then requeen it as soon as you can obtain a replacement queen, regardless of the month. This is one of the main reasons for keeping a few nucs on hand. Because if you find a colony with no queen or one with a drone layer during one of the colder months, November - March, and you have a nuc with a good queen, you can save that colony. If you have a bad queen, kill her and place the nuc directly on top of the brood chamber of this now queenless colony with (only) a single sheet of newspaper in between. Make one cut 3 or 4 inches long in the newspaper above where most of the bees are clustered. I have used this method many times to introduce new queens into full size colonies and, except for one time, it has been a good and reliable system of introducing a new queen. The one time that this system did not work was when I had a super of honey in between the brood chamber and the

newspaper. That is the reason for the wording above; place the nuc directly on top of the brood chamber.

If you requeen on a routine basis, August or early September, in my opinion, is a better time to requeen than in the springtime. Queens are more readily available in the fall than in early spring and if a queen is not accepted in September you still have time to introduce another queen before winter sets in.

There are other ways to successfully requeen an existing colony. To help you in this area, a few simple guidelines from the March 2002 Issue of the Bee Culture are listed below: These recommendations and comments are from an article on Queen Introduction written by Joe Latshaw. He operates the Ohio Queen Breeders in Columbus, Ohio and has successfully introduced thousands of queens.

He recommends that the queen cage be placed in the colony with both ends covered for 2 - 3 days then come back and remove the cork or other covering from the candy end of the cage. He does not recommend poking a hole through the candy to speed up the release of the queen. When you come back in 2 or 3 days first check for and remove any queen cells and then remove the cork from the candy end of the cage.

Regarding the attendant bees, he says that recent research indicates that queen acceptance is better and faster if the queen is alone in her cage. I, personally, would recommend against any attempt at trying to release the attendant bees in with the queen, as it is easy to release the queen by mistake.

The above method of introducing a new queen is one that I use when the queen is in a Benton three-compartment wooden shipping cage. It is another reliable method (in addition to the newspaper method) of introducing a queen but there is one step that I feel should be added. That added step is to return 2 days after the cork has been removed and, with no smoke, check and verify that the queen was released. (Delays in releasing the queen can be caused by crystal hard queen candy or the queen cage could be in a location away from the main cluster of bees.) If the queen has not been released and still in the cage, go ahead and release her. I like to release her on a frame of brood and observe how she reacts to the bees and how they react toward her. I usually observe her for no more than 60 seconds. If she starts running, place her back in the cage. If she moves slowly and starts searching for food or an empty cell, slowly replace the frame and close up the hive. That queen should be just fine.

Some beekeepers mark their queens or have them marked by the queen producer. Using a different color to mark the thorax is one way to document a queen's age plus the mark helps in locating the queen, especially in a populous hive. An international color code for marking queens has been devised where years ending in 1 or 6 are white; 2 or 7 are yellow; 3 or 8 are red; 4 or 9 are green and 5 or 0 are blue. To help in remembering this color code, it has been

suggested that you think of this: Will You Read Good Books, where W is for 1 and is white; Y is for 2 and is yellow; etc.

Some beekeepers never requeen with queens from a known stock. They, instead, let the bees raise their own replacement queen. This method of requeening, however, can be a gamble. A quick review of the queen biology can help explain this uncertainty.

Eggs hatch in three days and the larva, to produce a good queen, should be no more than about 12 hours old. The queen cells are sealed four days later and the new queens will emerge eight days later. This allows only four days for the larva to be fed as a queen larva. The amount and the quality of the food (royal jelly) that is fed to the queen larva during this four day period determines the size of the new queen and the number of eggs that the new queen can lay. Thus queens that are produced from older larvae or from larvae that are not fed properly will be inferior queens. Unfortunately the queen cell with the older larva will produce the first adult queen. That first adult queen, though she may be an inferior queen, will destroy all of the other queen cells and thus kill all of the potentially good queens. Queens that are produced from swarm cells, on the other hand, usually have good physical qualities. The eggs hatch in the swarm cells and thus the larvae are well fed from the very start of their life. Queens produced from swarm cells though can reinforce an undesirable characteristic and that is the instinct to swarm. These are a couple of the uncertainties that one takes in letting the bees raise their own replacement queen.

Most any colony will swarm when the queen runs out of space to lay in the brood chamber. This is normal and is not indicative of a highly developed swarming instinct. If, however, the colony swarms and only half of the brood frames are filled with brood, then that queen would appear to have a highly developed swarming instinct. Thus that queen would not be a good choice as a queen mother.

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This Month in the Bee Yard - September

If you used Apistan strips in one or more of your colonies for control of the varroa mites, remember these strips should remain in the hive for 42 to 56 days, (six weeks minimum and eight weeks maximum). Check your records and remove all Apistan strips after they have been in the hive for 56 days.

The asters should start blooming on or about September 21 and they should continue blooming through most of October. They continue to bloom even after a light frost. This honey is usually all stored in the brood chamber. Aster nectar has a strong and sour odor when brought to the hive. This strong odor will be radiating from each hive, especially in the evenings, as the bees start fanning the nectar brought in during the day. This odor signifies the start of the fall honey flow and is not a sign of foulbrood.

If you were unable to check your colonies last month, September is not too late to make these checks and verify that each colony has a good laying queen. It is not necessary to actually see the queen. Check the brood and the brood pattern. If you see brood in all stages, including eggs, then you had a queen there within the last three days. The brood should be in a compact area with only a few empty cells. The amount of brood depends upon the number of bees in that colony. A good queen in a colony with only a few bees or in a colony with very little honey stores may have little or no brood. Under these conditions, the queen is not at fault for the colony having very little brood. The queen is a very important factor in the life of a colony but look and consider these other factors when evaluating the queen of the colony.

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This Month in the Bee Yard - October

The asters that started blooming last month should continue blooming through most of this month, October. As previously noted, the asters continue to bloom even after a light frost and most of this honey is stored in the brood chamber. The typical strong and sour odor should be present as long as the bees are able to work the asters.

A colony, in the Piedmont area of North Carolina, will need at least a shallow super of honey (30 lb.) and at least three deep frames of honey (3 x 5 = 15 lb.) to carry them through the winter. The honey stores can be estimated by using three pounds for a shallow super frame full of honey and five pounds for a deep frame of honey. Toward the end of October, check the honey stores. If a colony does not have this minimum honey stores, that colony should be fed. As was noted in the February article, the easiest way to feed a colony of bees is to transfer a few frames of honey from another hive that may have more honey than they need. Another way to feed the colony is to feed sugar syrup. For fall feeding of sugar syrup, mix 1.5-part sugar to 1.0-part hot tap water. If you have the time and the facilities to heat the water on a stove, use 2.0-part sugar to 1.0-part water. Use an inside feeder such as a jar or pail with four small holes in the center of the lid. A frame nail is ideal for making these holes. With only a few small holes in the feeder lid, it will be less likely to leak out and flood the cluster during the temperature/pressure fluctuations between night and day conditions. Place the feeder over the hole in the inner cover or on top of the brood frames directly above the cluster of bees. Then place a super or a hive body over the feeder. An outside Boardman (entrance) feeder is not recommended in cold weather because it is too far removed from the cluster.

Near the end of October or early November, prepare all hives for winter. In addition to checking the honey stores as noted above, the other preparations are as follows: 1) Remove the queen excluder if part of the winter stores is above the excluder, 2) put an entrance reducer in place on each hive to keep mice out any time the bees can not guard the entrance because of low temperatures and 3) raise the hive cover approximately 1/8 of an inch by using four small sticks or shims between the inner cover and the outer cover to provide upward ventilation. These items are normally recommended for next month but if the weather forecast is predicting cold weather for early November, it may be better to prepare the hives a little ahead of time. These preparations will, however, be repeated next month in the November article.

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This Month in the Bee Yard - November

November is the time to get all hives ready for winter. Those preparations were mentioned last month but will be repeated this month and they are as follows: 1) Remove the queen excluder if part of the winter stores is above the excluder, 2) put an entrance reducer in place on each hive to keep the mice out, 3) raise the hive cover approximately 1/8 of an inch in order to provide upward ventilation and 4) check to make sure that each colony has enough honey to get them through the winter.

1) Remove the queen excluder if part of the winter stores is above the excluder. The queen excluder is removed so the queen won't be trapped below as the colony moves up through the excluder to get to the honey stores in the super above. If the queen were unable to move with the cluster, she would chill and die.

2) Put an entrance reducer in place to keep the field mice out of the hive. Mice can be a problem any time the bees cannot guard the entrance because of low temperatures. By installing the entrance reducer during a warm day, one would most likely avoid trapping a mouse inside the hive. Most commercial entrance reducers have two different size openings, one small opening and a larger three-inch opening. The three inch long (3/8 of an inch high) opening is recommended for wintering a full size colony.

3) Raise the hive cover approximately 1/8 of an inch in order to provide upward ventilation. This ventilation is very important and can be accomplished by placing four small sticks or shims on the topside of the inner cover to prop up the top hive cover. The moisture generated by the bees is vented through the opening in the inner cover to the outside instead of forming on the underneath side of the inner cover and dripping back on the clustered bees. This assumes of course that there is a normal hole or opening in the inner cover. Bees have little trouble with cold temperatures but cold temperatures in combination with moisture dripping back on the cluster can kill a colony. If during later checks, moisture is found on the underneath side of the inner cover, replace the spacers with larger sticks or shims.

4) Check to make sure that each colony has enough honey to get them through the winter. A colony with a shallow super full of honey (30 lb.) and at least three deep frames of honey (3 x 5 = 15 lb.) in the brood chamber should be enough to get them through the winter without being fed. The bees should be mostly located in the bottom brood chamber in the fall and only move up into the super or second hive body when the honey below is used up.

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This Month in the Bee Yard - December

Once the hives have been prepared for winter, as recommended last month, there is very little that needs to be done during the month of December. Even after a heavy snow or ice storm, don't worry about clearing the hive entrances. If all hives have good top ventilation, they will be fine until the snow or ice melts. At that point, check and make sure that the entrance reducer is still in place on each colony and that each entrance is open and not clogged with leaves or dead bees.

December, however, is a good time to do a little reading, make plans for next spring, assemble new equipment and make those needed repairs.

Two good reference books are the ABC and XYZ of Bee Culture and The Hive and the Honey Bee. These books are available from several of the bee supply dealers.

Two of the more popular bee journals are the American Bee Journal and the Bee Culture. If you are not familiar with either of these monthly bee journals, complete information on each company is listed below:

The American Bee Journal address is 51 South 2nd Street, Hamilton, IL 62341. Their web site is www.dadant.com and their e-mail address is abj@dadant.com. On their web site, select American Bee Journal for current and past table of contents as well as subscription information. They advertise that they will send a free sample copy upon request so you may want to write or send an e-mail and request a sample copy. If you do contact them for a sample copy, be sure to include your home address.

The Bee Culture address is The Root Candle Company, 623 W. Liberty Street, Medina, OH 44256. Their web site is www.BeeCulture.com and their e-mail address is info@BeeCulture.com. On their web site, you can view current issues or read some of the older issues. They too advertise that they will send a free sample copy upon request. Their complete information is listed above. Again if you do contact them for a sample copy, be sure to include your home address.

If you are a member of the North Carolina State Beekeepers Association (NCSBA), you can get a good discount on the above two journals. The coupons are on the last printed page of the Yellow Book. The coupon for the American Bee Journal gives you a 25% discount and the coupon for the Bee Culture gives you a 20% discount. The Yellow Book is the official handbook of the NCSBA and is produced annually as a free service to the membership.

I would like to wrap-up this final issue of This Month in the Bee Yard by inviting each of you to join the local chapter of the Alamance County Beekeepers as well as the state association, the North Carolina State Beekeepers Association. Attending and participating in programs, workshops and field days sponsored by these two organizations can help you become a better

beekeeper and help you stay better informed and abreast of what's happening in the field of beekeeping.

HIVE INSPECTION SHEET

Mann Lake Ltd. 800-880-7694

Hive ID _____ Yard# _____ Date: _____ Who worked hive: _____

HIVE TEMPERAMENT

Calm Nervous Aggressive

SAW QUEEN Yes No
(Marked? Yes No - Color _____)

LAYING PATTERN

Beautiful (Solid & Uniform)
 Mediocre (Little spotty)
 Poor (Spotty)

EGGS SEEN Yes No

Comments: _____

POPULATION

Heavy Moderate Low

QUEEN CELLS Yes No

Alone frame bottom: # _____

Converted worker cell: # _____

DISEASE/PESTS Yes No

Chalkbrood Nosema Varroa Mites
 Tracheal Mites EFB AFB
 Small Hive Beetle
 Others: _____

MEDICATIONS

Added Date _____

CheckMite+™ Apistan® Mite Away II™
 Fumagilin-B Mite-A-Thol® Tylan®
 Terramycin™ Terra-Pro
 Others: _____

Removed Date _____

CheckMite+™ Apistan® Mite Away II™
 Fumagilin-B Mite-A-Thol® Tylan®
 Terramycin™ Terra-Pro
 Others: _____

INTEGRATED PEST MANAGEMENT

Screened bottom board
 Powdered sugar mite drop
 Drone cell foundation
 Small hive beetle trap
 Others: _____

EARLY SPRING INSPECTION

Reversed brood box(es) # ___ Deep ___ Med ___ Shallow
 Cleaned Bottom Board

SPRING FEEDING/BUILD-UP

Bee-Pro®: _____ Dry _____ Wet _____ Patties
 Syrup: _____
 Pollen Sub: _____
 Sugar Syrup (1/1 ratio): _____
 Other: _____

HONEY FLOW PREPARATION

Added super(s): ___ Deep ___ Med ___ Shallow
 Split hive (new hive# ___) Add inner cover
 Added excluder Requeened Added feeder
 Added pollen trap Fed Hive

HONEY REMOVAL/EXTRACTION

_____ # Supers removed
_____ pounds of honey extracted
_____ pounds comb honey
_____ pounds of pollen
 Removed excluder

FOOD STORES

	Honey	Pollen
High (Everywhere)	<input type="checkbox"/>	<input type="checkbox"/>
Average	<input type="checkbox"/>	<input type="checkbox"/>
Low	<input type="checkbox"/>	<input type="checkbox"/>
Near brood	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Fed hive		
<input type="checkbox"/> Sugar Syrup (2/1 ratio):	_____	
<input type="checkbox"/> Syrup:	_____	
<input type="checkbox"/> Bee-Pro®:	_____	
<input type="checkbox"/> Other:	_____	

HIVE CONDITION

Normal Brace comb Excessive propolis
 Normal odor Foul odor Equip. Damage
 Replace Equipment-What: _____
 Other: _____
Type of Foundation: Rite-Cell® Plastic Frames
 Duragilt® Wired Medium
Replace Foundation: Yes No

Notes:

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LEARNING HOW TO KEEP BEES

In today's world of Beetles and Mites

by Jerry Freeman
Hamburg, Arkansas
jfreeman1944@yahoo.com

Compared to today, beekeeping in the 1970's was easy! Back then I ran 25 to 30 hives for honey production and raised Queens for a commercial beekeeper. Honey production was literally a 3 step operation: reverse the brood boxes in March, add honey supers in April and extract in July. Over the years only one hive developed American Foulbrood and I promptly burned it. Since I re-queened in the fall, swarming was a minor issue. Life was good!

Job and family responsibilities forced me out of beekeeping in the early 1980's. I didn't bother to keep up with the industry literature and the news media ignored the problems that killed nearly half the honey bee colonies in the U.S. I had no idea how much beekeeping had changed.

Around 2005, a few of my friends asked me to help them with their beehives. They had formed the Ashley County Beekeepers Association and all were struggling to keep their bees alive and make a few jars of honey. I thought, 'Hey, this will be easy!' Little did I know it would take over 2 years of hard work to learn how to deal with today's beekeeping problems with any degree of confidence. (Ashley County is in the southeast corner of Arkansas on the border of Louisiana.)

Only a few of the members had done any research and those few had run into 'information overload'. Much of the information was confusing to them. Most articles dealt with a specific issue in great detail, making it hard to connect key elements and draw suitable conclusions. It took probably 6 months for me to realize that I knew no more than they did about the current problems of beekeeping. However, I had the advantages of prior experience and basic beekeeping knowledge. We began an earnest search of the internet, supply catalogs and The American Bee Journal for solutions. At first we had informal meetings and discussions. I soon began writing articles on basic beekeeping and leading the discussions. In the process, I fell in love with beekeeping all over again. My wife says I have a severe case of 'Honey Bee Fever'!

We quickly realized the members needed me to inspect their hives and suggest actions they needed take. At times we had 5 or 6 members gather to inspect a hive. Many of them needed to learn how to recognize sealed brood, capped honey, drones and other wonders within the hive. One member made it clear he wanted to know, "What am I looking for and what should I do about it?" That is our approach to beekeeping. I have to read through lot of scientific details when researching problems, but our 'How To' guides are focused on practical application with as few scientific details as possible. I have found that most beginners (and some old timers!) feel this way. They don't want to know about the life cycle of Varroa mites, they just want to know how to kill them.

From this beginning, we developed the following Hive Inspection Checklist and an explanation for each item on the list. The first inspection column is filled in for illustration. Refer to the check list as you read the explanations to see how each item is recorded.

HIVE INSPECTION CHECKLIST

HIVE NUMBER #4	Dates:	3/21/08					
Temperature		72					
Traffic at Entrance: High Med Low		H					
Bees Crawling on the Ground?		N					
Bees Bringing in Pollen?		Y					
Hive Beetles on the Lid?		N					
Feeder in Place?		Removed					
# Frames of Sealed Brood / % V		6 / 90%					
# Frames of Open Brood		2					
Any Sign of Brood Disease?		N					
See Small Larvae?		Y					
See Eggs?		--					
See Open Nectar in Combs?		Y					
Total Frames of Bees		12					
Total Frames of Brood		8					
Total Frames of Honey		3					
# Deep Boxes	# Medium	2 / 1	/	/	/	/	/
# of Bad Combs		3					
See the Queen?		Y					
See Queen Cells?		N					
See Drones?		Y					
Temperament: Calm Avg Bad		C					
Medications Added or Removed							
Apistan	A R	Add	R	-May 2			
Check-Mite	A R						
Terramycin	A R						
Mite-A-Thol	A R						
Fumagilin	A R						
Formic Acid	A R						
Bottom Board: Clean Avg Dirty		Avg					
COMMENTS: Date, Actions Taken, What's Blooming? Next Inspection Date? Action Needed?							
3/21/08 - Population growing OK, Several frames with open nectar. Need to work at removing bad combs							
Queen looks fat and energetic!							

HIVE INSPECTIONS

To have healthy, strong, honey producing hives, beekeepers must make **inspections** to know the **conditions inside the hive**. Hive inspection is simply a term to describe:

- Taking the hive apart and making observations, then
- Deciding what needs to be done, *based upon those observations*

There are a number of things we need to look for when we inspect a bee hive. An inspection sheet helps keep things organized and allows easy comparison from one inspection to the next. Experienced beekeepers may find this check list too detailed, but that's really the point. It helps keep beginners and forgetful old folks like me from overlooking something important.

APPROACH the hive from behind or from the side. As much as possible, stay out the bees' line of flight. The rule of thumb is to smoke the bees a little and smoke them often. Give them 2 or 3 puffs of smoke in the entrance and under the lid before opening the hive. After that, giving them 1 or 2 puffs of smoke across the frames before you remove each frame will usually keep them calm. Smoke under each box before removing it. If the bees get aggressive, put a LOT of smoke in the air. This will mask the alarm scent and some of the bees will seek shelter inside the hive.

HIVE INSPECTION CHECKLIST

HIVE NUMBER: Identify the hive **DATES:** Enter the date for each of 6 inspections

Temperature (These are general guidelines and not necessarily exact facts.)

Below 30 ⁰ F	Open the hive only in emergency, such as to feed or remove chemicals. If feeding is necessary below 30 ⁰ F, we must use dry sugar so the feed won't freeze.
Below 40 ⁰ F	Open the hive only in emergency, such as to feed or remove chemicals. Bees cannot get far from the warmth of the cluster at below 40 ⁰ F so feed must be placed directly above the cluster.
Below 50 ⁰ F	At 50 ⁰ F, the bees are loosely clustered. The hive can be opened but brood combs should NOT be removed. Side combs can be removed to look at brood combs, but must be replaced quickly to avoid letting the brood get chilled.
55 ⁰ F	Bees begin to fly at 55 ⁰ F, especially for cleansing flights. Honey bees will not defecate inside the hive unless they have Nosema – Honey Bee diarrhea. They will also begin flying to collect nectar and pollen if it is available. Hives can be opened, but care must be taken to avoid chilling the brood.
60 ⁰ F	Complete hive inspection can be made, but brood combs should be returned to the hive quickly.
70 ⁰ F	70 ⁰ F is warm enough to completely disassemble the hive and frames for a thorough inspection.

Traffic at Entrance: High Medium Low

Low traffic at a time when you expect bees to be very active may indicate a problem inside.

High Traffic = 1 or more bees landing or leaving per second. We expect high traffic in mid-morning on a warm day when pollen and nectar are available.

Medium Traffic = 1 bee landing or leaving every 4 or 5 seconds. Cool weather, high wind or slow nectar flow may reduce traffic to medium. Also, some nectar flows are reduced in the afternoon which could slow traffic.

Low Traffic = 1 bee landing or leaving every 10 seconds or longer. This may be normal for existing conditions. However, in mid-morning on a warm day when pollen and nectar are available *we expect high traffic*. If a hive has low traffic when you expect high traffic, make a careful inspection for bee population, honey stores, open nectar, amount of brood, appearance of brood, beetles and anything else that might indicate a problem.

NOTE: If the hive looks OK after inspection, check it again the next day to see if traffic has returned to normal. If not, use a sticky board to check for Varroa mites. Treatment may be necessary.

Bees crawling on the ground?

This is another indicator of possible problems. It is normal to see a few dead bees in front of the hive. Some bees die of old age inside the hive and are removed by housekeeping bees. More than a dozen dead bees in front of the hive probably calls for a close inspection of the hive.

More than half a dozen bees crawling on the ground in front of the hive are an indication of sick bees. First, touch the bees with your finger or a twig to see if they can fly. If the bees do not fly, check their wings. If the wings are tattered on the lower edges, the bees are just worn out and there's not a problem. *If the wings are deformed*, there are likely Varroa mites in the hive. Even if the wings are not deformed, if the bees can't fly, we need to make a close inspection of the hive. We also need to make a mite count with a sticky board. Treatment may be necessary.

Bees bringing in pollen?

If the bees are bringing in many loads of pollen, it's a good sign of brood rearing and that all is well. Fewer loads of pollen do not necessarily indicate a problem. Very few or no loads of pollen at all when you know brood rearing should be heavy is cause for a close inspection of the hive. If there is little pollen available in the combs, you probably need to feed a pollen supplement so the bees will have the necessary protein for raising brood.

Hive Beetles on the lid?

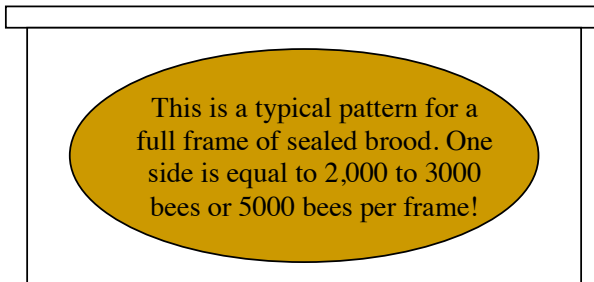
Normally, few beetles will be seen on the lid unless there is a heavy population of beetles. If *any* beetles are seen in the hive, a screened bottom board with an oil tray should be installed at once. (We designed a screened bottom board with a rear entrance and no ledges for beetles to lay eggs on – beetles and mites fall directly into the oil tray. I hope to show this in a later article.)

Feeder in place?

This is just information. If you need to feed the hive, you know whether a feeder is on it.

of Frames of Sealed brood / % V (Brood Viability)

This is a measure of the growth of the hive and the performance of the Queen. The number of frames of sealed brood should increase from winter to the spring honey flow – from a small hand sized patch in early February to 8 or 10 frames in April. We have to estimate how many full frames of brood (both sides) all the patches add up to. We primarily want to compare the amount of brood to the last inspection, so use the same method of estimating each time. For example, 4 half frame patches equal one full frame.



The normal amount of brood will vary with the season. In our area there is very little nectar during summer and good queens reduce brood rearing. In October we feed light syrup to stimulate brood rearing to have young bees for the winter. We probably need 4 or 5 frames of sealed brood throughout October.

NOTE: If the capping on any sealed brood is sunken in, check it for disease. To check a cell, use a matchstick or twig to remove the pupae. If it doesn't look normal, get someone to check the hive for you.

Brood Viability is the percentage of brood that develops into healthy larvae. This is a measure of the Queen's genetic background. 'Spotty' brood has a lot of empty cells. To check brood viability, take a piece of paper or cardboard and cut a hole in it 2 1/8" X 1 7/8" square. Place the paper over an area of sealed brood. The hole will expose 100 cells of brood. Count the empty cells and subtract from 100 to get the percentage. (e.g. 100 – 11 = 89%) More than 85% viability is considered OK. If there are more than 15 empty cells, the Queen should be replaced.

Open brood?

Open brood in different stages of development (different sized larvae), gives us an opportunity to check the health of the brood. Healthy brood is white and looks moist. Estimate the # of frames of open brood and record on the check list.

Any sign of Brood Disease?

If any larvae is dark, looks dry or has dissolved into 'goo', there is some disease present. One or two cells may not be a problem, but a dozen cells of sick brood will require some action or treatment. Get someone to check the hive for you.

Small larvae?

This is just information. Small larvae indicate that the Queen has recently been present.

Eggs? If eggs are present, it's a good sign the Queen is OK even if you don't see her.

Open nectar in the combs?

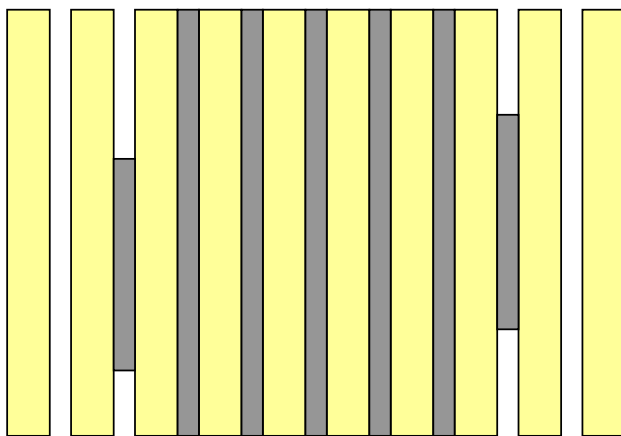
Open nectar usually indicates fresh nectar. This means something is blooming and the hive is healthy enough and strong enough to collect it. We watch for this in late winter and early spring. The hive may have only 2 deep frames of honey, but if it has fresh nectar, feeding probably won't be necessary.

NOTE: The hive stores need to be watched closely in the spring because brood rearing consumes a lot of honey. If cold weather stops foraging or the nectar flow stops, the honey stores could disappear quickly.

Total frames of Bees

Since this is used only for comparison to the last inspection, we don't need a precise count of the bees. If we count the spaces between frames that are full of bees we can tell if we have more bees or fewer bees than at the last inspection. This will also tell us how many frames of brood the bees can cover. Take into account the difference in temperature. Bees crowd closer together as the weather gets colder. The same number of bees that covered 8 frames at 60⁰ F may cover only 5 frames at 40⁰ F. In the diagram, consider the frames as being yellow and the dark spaces as being full of bees. As a rule of thumb, it takes at least 3 frames more of bees than brood for the brood to stay warm. (The bees cluster on the brood and keep it between 92⁰ F to 97⁰!)

TOP VIEW OF THE FRAMES AND BEES



In this example, we would have 5 frames of bees and 2 half frames of bees. For total frames of bees, I usually don't count the half frames. If the next box has 3 frames of bees, I would count 8 total frames of bees. A total of 8 frames of bees can cover 5 frames of brood. *We need to compare the number of frames of bees to the number of frames of brood before adding an empty comb in the middle of the brood nest for swarm control.*

Total frames of brood?

We cannot count the frames of brood until the temperature is 60⁰ F or above. Below 60⁰ F, we can remove 2 side frames and slide the other frames over to see if they have brood. It is not necessary to have a completely accurate count. We want to see that there is a normal amount of brood for the season and conditions. In early spring, we also want to see that we have more brood than at the last inspection. When counting total frames of brood, count the total frames of open brood as well as the sealed brood. (Just add the frames of sealed brood and open brood on the checklist.)

Total frames of honey?

We want a good guess at the amount of food stores in the hive. There will be half a frame of honey here and a hand sized patch there. Estimate how many deep frames all of it would fill. Anytime honey stores are less than the equivalent of 2 deep frames we either need to feed the hive or inspect it weekly to be sure they don't run out.

of Deep Boxes # of Medium Boxes

We want to work our hives down to 2 deep boxes for winter. Some beekeepers prefer 3 medium boxes because they're lighter and easier to work with. Too many supers and combs make it difficult for the bees to take proper care of the hive. Extra supers and combs should be stacked and stored with moth balls. Recording the # of deep and medium boxes will help us organize our hives for fall and winter. We may want to take boxes off tall hives and add them to short hives. We will often have to exchange frames between hives to accomplish this. *It is therefore critical that we keep our hives healthy so we don't spread a problem in one hive to other hives.*

Total # of Bad Combs?

This is a reminder to bring several good combs to the next inspection. If the bad combs are empty or nearly empty we need to replace them. So many of our members have bad combs that we're working on a method to induce the bees to clean out the bad combs so they can be replaced.

See the Queen?

It is always good to see the Queen. If the Queen has been marked, you can tell if it's the same Queen or a new Queen. The Queen's abdomen should be plump with eggs when she's raising brood – which is all year, except a short time in winter. Does she move 'gracefully'? If she has trouble moving, you probably need to replace her.

See Queen Cells?

Bees will build Queen cells to supercede (replace) an old or failing Queen. Bees will build Queen cells in an emergency – maybe you killed her during the last inspection. Bees will build Queen cells so they can swarm. Bees will usually build only a few supercedure or emergency cells on the face of the comb. Swarm cells are usually built near the bottom of the combs and may number over a dozen.

If you see supercedure or emergency Queen cells, close the hive and wait for the new Queen to start laying. That should be in 2 or 3 weeks.

If you see swarm cells, you have to decide what you want to do. Several options are described in a later article on swarming.

See any Drones?

Drones are a normal and necessary part of the colony. Drones are necessary to mate new queens if something happens to the old one. Bad or deformed comb can cause an over abundance of drones and should be replaced.

Temperament

Calm, Average or Bad. Colonies will have different attitudes on different days. If a colony has a consistently bad temper, you may want to replace the Queen.

Medications Added or Removed

Writing an A or an R will show when a medication was added or removed. If a medication is added, I write the date for removal in the next box. (See example on the Checklist)

Bottom Board: Clean Average Dirty

For solid bottom boards, this is an indication of colony strength and hygiene. There will always be some amount of trash on the bottom board, but I've seen it half an inch deep and full of beetle larvae. Definite sign of trouble.

Screened bottom boards are a different situation. The trash falls to the ground or into an oil tray. Because of beetles and mites, screened bottom boards are recommended over solid bottoms.

Comments: Write the date at the beginning of the line to identify when the comments were made. Your comments may include questions or your opinions. Other examples are: Actions Taken, What's Blooming? Next Inspection Date? Action Needed.

LEARNING how to make a good inspection is the first step of beekeeping. Of course there were references to things not fully explained. Hopefully, this will peak your curiosity to learn more. We can leave the scientific details to the researchers, but we certainly have to know a lot about bees to be successful in today's conditions. This same inspection sheet will give us different information at different times of the year and different conditions within the hive. It takes a while to learn how to best react to the observations we make during the inspections, but healthy hives and good honey crops make it worthwhile.

Seasonal Management Resource Listing

Books

Beekeeper's Handbook - Diana Sammataro and Alphonse Avitabile, ISBN: 0801485037

A comprehensive well-illustrated introduction for beginners and a valuable reference for the experienced beekeeper.

Hive Management: A Seasonal Guide for Beekeepers - Richard E. Bonney, ISBN: 0882666371

The beekeeper's year begins with a late winter hive inspection and ends with "putting the bees to bed" in the autumn. Richard Bonney believes that each beekeeping activity should be performed with an eye toward the overall well-being of the colony, as part of an integrated year-round program of hive management.

The Hive and the Honey Bee - Dadant & Sons, available at www.dadant.com

The latest edition of the classic book on beekeeping. Completely rewritten, revised and enlarged. The best reference book on honey bees and beekeeping. 22 chapters, 33 world-famous authors, hundreds of photos and drawings, clothbound with attractive gold stamped cover and spine, and many special features: new 52-page U.S. and Canadian honey plants table, updated Africanized honey bee information, parasitic bee mites management, business practices, marketing, hive products, bee behavior, pesticides, and more.

Honey Bee Biology and Beekeeping - Dewey M. Caron, Available from Wicwas Press, www.wicwas.com

Honey Bee Biology and Beekeeping explains bee biology, what bees do, and provides the tools which make it possible for an individual to successfully manage bee colonies. The author has concentrated on the "why" aspects of bee biology so that the reader understands "when" and "how" certain things must be done to colonies. Bees and beekeeping are explained in a manner meaningful to a person who lacks an extensive background or knowledge of biology. Yet the author has not oversimplified bee biology to the point where it is meaningless to the serious beekeeper or informed biologist.

Online Resources

A Year in The BeeYard • <http://alamancebeekeepers.com/year.aspx>

A collection of articles written and corrected by Mr. Ken Pipes Member of the Alamance County Beekeepers.

Beekeeping Calendar • <http://forsythbeekeepers.org/beekeeping-calendar/>

Monthly management recommendations by by Dr. Buddy Marterre of the Forsyth County Beekeepers Association.

Honey Bees and Beekeeping: A Year in the Life of an Apiary with Dr. Keith Delaplane

http://www.extension.org/pages/Honey_Bees_and_Beekeeping:_A_Year_in_the_Life_of_an_Apiary

An eight episode series designed to teach novices the basics of beekeeping and to give more experienced beekeepers expanded knowledge. Eight 30-minute episodes on DVD trace the development of ten honey bee colonies from start-up through a complete year of management. Nationally known entomologist Keith S. Delaplane, Ph.D., is the host of the series.

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Seasonal Management Class Review

Please rate the level with which you agree with the following statements:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
This class was interesting and stimulated my interest in the subject matter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The instructor answers questions carefully and completely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The class materials reflected the subject matter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The quality of the visual aids were good and appropriate to the subject matter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was able to follow along and keep up with the subject matter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This class met my expectations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What did you like about this class?

What didn't you like about this class?

What topics should have been covered and were not?

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Course Review

A brief overview of the course will be conducted followed by the option to take the written test for certification. Passing the written and practical tests are required steps in the Master Beekeeping Program. The practical exam will be administered during the field day, date and location TBD.

First Lessons in Beekeeping corresponding chapter Glossary beginning page 148

Class Notes

A large, empty rectangular box with a thin black border, occupying the lower half of the page. It is intended for students to write their class notes.

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You know you're a beekeeper when...

By John Caldeira, with contributions from many others.

The windshield of your vehicle has at least two yellow dots on it.

You have answers ready for questions about Africanized bees and the value of local honey in preventing allergies.

Your family eagerly await the phone call from the post office asking you to please come pick up your bees.

You check out all the honey labels and prices at the supermarket.

You've gone through the supermarket checkout line buying nothing more than a big load of sugar, and maybe some Crisco.

You've estimated just how much money you spent to control mites.

You pick up matches at restaurants, even though you don't smoke.

Your friends and neighbors think you are the answer to every swarm and bees-in-the-wall problem.

You are keenly aware of the first and last freezes of each winter.

There is propolis on the steering wheel of your vehicle and the bottom of your boots.

There is a bucket of something in your garage that can only be good for smoker fuel.

You are called "the Bee Man," or "the Bee Lady" by a lot of people who don't know your name.

You know the bloom period of more local flowers than the state horticulturist.

You welcome a rainy weekend if it will stimulate nectar production.

You don't mind driving home with a few honey bees inside your vehicle.

Your family and friends know exactly what they're going to get for Christmas.

You don't mow the lawn because the bees are working the weeds.

You drive down a road and find yourself evaluating the roadside flowers for their honey-producing potential.

You pull over and check the bees on the wildflowers just to see if they are YOUR bees, AND -- you can tell the difference.

You come home smelling like a camp fire, and you haven't been camping.

You saw Ulee's Gold and didn't think there were enough shots of the bees.

You overhear your 9 year old daughter explaining to her friends how to tie a trucker's hitch.

The school principal calls to ask that you never again let your child take a drone tied with a thread to school for show and tell.

You never stop marveling at these wonderful creatures.

Excerpts from the above list were published in American Bee Journal (December, 1998), which prompted the following responses from readers:

You know you're married to a beekeeper when...

You spend at least one day a week on your hands and knees with a sharp knife scraping wax and propolis off your kitchen floor.

You've ever used bee boxes as furniture in your house, for coffee tables, chairs, night stands, and storage boxes.

You mow around mountains of bee equipment that never seems to make it to the barn.

You plan weddings, child birth, surgery and funerals around honey extracting time.

When buying a new truck, your spouse checks weight loads and measures the bed to see how many hives he can fit in it.

You get stung by the bee that was clinging to your husband's bee suit when you picked it up to wash it.

Overall Beekeeping Course Review

These statements apply to the course as a whole. Please rate the level with which you agree with the following statements:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I feel confident in my ability to begin keeping bees	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The overall course was structured and laid out well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would recommend this course to others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The entire course met my expectations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What did you like about the course overall?

What didn't you like about the course overall?

What topics would you like to learn more about?

What improvements can be made to enhance the course?

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