

*To every thing there is a season, and a time to every purpose under the heaven:
 A time to be born, and a time to die; a time to plant, and a time to pluck up that which is planted;
 A time to kill, and a time to heal; a time to break down, and a time to build up;
 A time to weep, and a time to laugh; a time to mourn, and a time to dance;
 A time to cast away stones, and a time to gather stones together; a time to embrace, and a time to refrain from embracing;
 A time to get, and a time to lose; a time to keep, and a time to cast away;
 A time to rend, and a time to sew; a time to keep silence, and a time to speak;
 A time to love, and a time to hate; a time of war, and a time of peace.*

-- Ecclesiastes 3:1-8

I've spoken to new beekeepers recently who were concerned about summer swarms and were preparing to make splits. Others had questions about when to apply varroa mite treatments or start/stop feeding. Many of these questions were about how to do perfectly reasonable things but at unreasonable times of the year or the life of the colony. Without any experience as a guide, how can anyone know what to expect, and do, next?

This month's article is an attempt to highlight the management tasks that we should focus on within a year. **Note that it is based on my view of the world from my particular location (northeastern Orange County) and my beekeeping goals.** You'll need to adjust these recommendations as appropriate to meet your needs and circumstances. Also note that I do things that many of my well-respected colleagues do not do and vice versa. That's fine; we agree on the fundamental points of Good Beekeeping Practices, we just have different ways of achieving our objectives. That's one of the things that makes beekeeping interesting.

My definitions of the seasons are those of a beekeeper, not a Normal Person. For example, in our area, a beekeeper's fall begins in August and winter begins in November.



We could start our beekeeping calendar at any point because it goes around in a continuous cycle. But it may be easiest for us to begin in mid January.

Late Winter (mid January to end of February)

Outside the hive: The average daily high temperature is 49 and 53 degrees for January and February, respectively; the average daily low is 28 and 29. The actual temperatures fluctuate above and below the mean, giving our bees frequent opportunities to take cleansing flights (temperature at least in the upper 40s/low 50s) and foraging flights (temperature at least in the mid 50s).

Red maple trees bloom in January and February. The bees voraciously forage on them when the temperature allows them to do so. They are an extremely important pollen source for early colony build-up.

Inside the hive: The colony is in winter cluster once the temperature drops into the 40s and below. They regulate the temperature of the cluster and especially the brood nest, keeping the brood at a constant, toasty 95° F. After having stopped laying for winter, the queen begins again in mid January.

Management: If the colony was well provisioned with stores in the fall, there isn't much the hobby beekeeper needs to do in

January/February. Monitor the amount of honey stores by lifting the hive an inch or so from the back. If it is light, we must feed sugar (2-to-1 sugar syrup works fine) or the colony will likely starve before the main nectar flow begins in April.

If the beekeeper needs to artificially boost the population of bees for early-season pollination or to make splits for sale, the colony can be fed protein patties (made of pollen or pollen substitute) and sugar syrup during this time. Nurse bees basically turn pollen into brood, but carbohydrates (sugar syrup) must also be fed if pollen is being fed. If this supplemental protein feeding is done, great care must be taken to avoid early-season swarming and starvation due to an abnormally large bee population. This can be quite a challenge. In my opinion, it is not in the best interest of most hobbyists to artificially boost their colony populations in this way and I do not recommend it unless there is a certifiable need for it. The natural pollen flow in the Piedmont is usually more than sufficient for normal brood rearing.

Miscellaneous: If you haven't already done so, order packages and nucs. The earliest orders get the earliest delivery dates, which typically provide the best chance for success.

Attend a good bee school (see [Get Thee to a Bee School](#)), if you remembered to register in November/December.

Enroll or refresh your enrollment in the NCDA&CS-sponsored BeeCheck program (see [Save the Bees, Starting with Yours](#)).

Finish assembling and painting new equipment now, before you need it.

Early Spring (March)

Outside the hive: The average daily temperature is in the 60s, very nice weather for foraging. The major nectar- and pollen-producing plants cease blooming in March. Many miscellaneous plants such as henbit can be seen blooming but the overall volume of available pollen and nectar drops precipitously (see [Beware the Ides of March](#)).

Inside the hive: Colonies that have been

rapidly expanding on the maple flow can easily starve to death during the March dearth.

Rapidly-growing colonies, especially second-year or older ones, may swarm starting in March.

Management: Keep a watchful eye on colonies to prevent starvation, especially among strong colonies. Feed as needed.

Don't be fooled into thinking the main honey flow has begun just because we see lots of pretty little flowers blooming everywhere. It hasn't, at least not for most of us.

If you began feeding pollen and sugar syrup in late winter, keep it up. Otherwise the artificially strong colony you have created will starve.

Take precautions to attempt to control swarming. For example, ensure that there is plenty of space for the queen to lay eggs within the brood nest. "Space" means empty drawn comb ready for eggs, not just foundation. The space must also be within the brood nest – adding supers above the nest does nothing to relieve congestion within it.

If the colony makes swarm cells, creating early-season splits may help or at least salvage some value from the colony (see [Making Splits Without Bananas](#)). Don't make splits that are too skimpy in March; cold nights can kill brood if there aren't enough nurse bees to keep them warm.

Perform a sugar-shake test to assess the varroa mite infestation level in colonies (see [Don't See Any Mites](#)). This is a great time to apply MiteAway Quick Strips (MAQS) if needed. MAQS requires relatively cool temperatures (highs in the 60s to mid 70s is ideal) and only stays on for seven days. There should be plenty of time to treat before putting on honey supers.

Miscellaneous: If you ordered early and the south Georgia weather has been cooperative, you may receive your package bees in late March. The key to success of packages is feed, feed, and keep feeding. See [Yum Yum, Eat 'Em Up!](#)

Attend the NCSBA spring conference in March. The 2017 conference (March 3-4, 2017) is the biennial joint meeting with the South

Carolina beekeepers. They will be hosting at York Technical College in Rock Hill, just across the state line south of Charlotte.

Spring (April, May)

Outside the hive: Tulip poplar should begin blooming in mid April, give or take a couple of weeks. Blackberry, clovers, sumac, holly and many other important nectar plants also begin blooming in April. Most of these, including tulip poplar, cease blooming by the end of May.

Inside the hive: Colonies will build up to their yearly-maximum population. Drone production is at its maximum. Swarming is common.

The start of the main nectar flow is easy to recognize in the Piedmont. Outside the hive, we see tulip poplar flowers begin to open. Inside, bees will begin drawing new wax; we'll start to see pretty white frosting on the rims of old cells. Even more obvious is that empty cells begin to be filled with nectar. Now is the time to put on honey supers!

Management: Add honey supers but don't get too carried away all at once. If the frames have foundation but not drawn comb, add a super when about 2/3 or 3/4 of the frames are drawn out in the previous box. If the frames already have empty drawn comb from the previous year, I add one or two supers at a time. More empty space than that, unguarded by the bees, can be an invitation for hive beetles and wax moths to run amok. When the bees begin filling the top-most super, I add one or two more.

Don't feed colonies that have honey supers on. Sugar water "honey", also called "funny honey", isn't real honey and it is fraudulent to sell it as such. If our colonies need feeding at this time, they aren't production-ready. Feed them if needed but don't put on supers for harvest.

Don't apply varroa treatments while honey supers are on the hives in order to avoid imparting an "off" taste to the honey or otherwise tainting it. If we must treat during the honey flow, remove supers that hold honey intended for human consumption. Be proactive

– assess mite levels in March and treat with MiteAway Quick Strips before supers go on.

If our goal is to make more colonies rather than honey, now is a great time to make splits. We can also make eclectic splits by taking a single frame from several colonies rather than literally splitting a colony in half. This minimizes the "hit" on any single colony and so may allow the parent colonies to still make a decent honey crop. See [Making Splits Without Bananas](#).

Guess what we need to do with first-year packages and nucs? Yep, continue feeding. Spring is when the bees are most inclined to create wax, and ideally they should have all of their wax-building completed before the summer dearth begins.

Keep an eye on honey stores in the year-round brood nest area, which for me is comprised of two deep 10-frame hive bodies. If there is not much honey in this space, consider removing honey supers before the flow ends so that it can be well-provisioned by the time the summer dearth begins.

Summer (June, July, August)

Outside the hive: The major nectar-producing plants have ceased flowering. There may be lots of miscellaneous ornamental plants around but the total volume of their production is paltry compared with the volume during the main nectar flow.

Inside the hive: The colony no longer needs a huge foraging force because there is very little forage available. A well-behaved queen will dramatically reduce egg laying. This thrifty trait is common among bee races such as Carniolans and Russians but may be weak or absent in Italians. An uninformed beekeeper may decide that a colony is queenless when little or no brood is seen, but it may be that the queen is simply being thrifty by halting brood production.

Swarming typically becomes a nonissue for most colonies. Colonies can potentially swarm at any time of year but after the main nectar flow has ended, a well-behaved colony shouldn't swarm. Even if they do, we should have our annual honey harvest safely packed

away in bottles or buckets so the downside to swarming is significantly reduced.

Robbing becomes a major concern in summer. Weak hives should be protected with entrance reducers and/or robbing screens. Dr Eric Mussen at UC Davis has a nice article about robbing screens <[here](#)>.

Colonies with uncontrolled varroa mites often collapse mid-summer. These are typically our strongest, best-producing colonies. Once brood rearing slackens due to the summer dearth, the proportion of varroa-infested brood skyrockets. Viruses transmitted and activated by the mites can kill the entire colony within a few weeks.

Management: We should harvest our honey as the spring flow wanes or at the very beginning of the summer dearth (see [Spinning Gold](#)). After harvest, put away honey supers and frames; don't leave excess space on hives that can be ruined by small hive beetles and wax moths. The only space we need during the summer is that which we use for the year-round brood chamber, just as we do for winter. Remember: too much space is bad, too little space is bad, the right amount of space is just right (see [Standard Equipment: How Standard is it?](#)).

Don't be complacent with respect to mites. A friend with a brand-new colony, which she started from a nuc in May this year, had 30 mites in a 100 mL sample of bees in mid July. That's an outrageously high number! My friend hadn't been negligent or done anything wrong. The mites are just having a very bountiful year. Don't let them catch you by surprise: monitor and treat as described in [I Don't See Any Mites](#).

It is too hot to treat for varroa mites with the popular thymol or formic acid treatments. ApiVar is a good synthetic alternative if we cannot wait until the end of August/early September before treating. Oxalic acid can be used as a flash treatment but should be followed up with a more effective treatment later in the year.

Check stores periodically to head off starvation. Feed colonies that have insufficient honey stores.

Make sure the water we are supplying our bees doesn't run out (see [Got Water?](#)). If it does, they'll surely find our neighbors' swimming pool or hot tub. Once trained on a new, inappropriate source, they will be difficult if not impossible to retrain.

Miscellaneous: Politely chat with friends and neighbors about the dangers of using powdery insecticides such as Sevin dust on their Japanese beetles. Honey bees can collect it as if it were pollen and feed it to the colony. Effective alternative insecticides are available. Regardless of what is used, remind everyone that "the label is the law" and they must follow the directions to the letter. Look for honey-bee-specific warnings and instructions when choosing and using insecticides.

Attend the NCSBA summer conference in July. The 2017 meeting will be July 13-15 in Winston-Salem. It will be the NCSBA's 100th anniversary so will be a really big deal.

Fall (August, September, October)

Outside the hive: Goldenrod begins blooming in August, followed by a variety of asters in September. Both bloom up until the first hard frost. Both, but especially asters, are our major fall nectar producers. In a good year, they provide plenty of honey to tide our bees over until the next major spring flow. However we cannot count on having a good year and must be prepared to feed sugar syrup to take up any slack.

When aster nectar is bountiful, we can smell it curing within our hives from ten or more feet away. It has a very distinctive stink, not at all pleasant, a bit like old gym socks. But as the paper mill tycoons used to say in Canton, NC, "that smells like money." My wish is that all of our bee yards stink this fall.

Up north (aka Yankee Land), goldenrod honey is feared and beekeepers sometimes go to great lengths to get it out of their over-wintering hives. In addition to the fact that it granulates quickly in the comb, it has a high ash content and thus contains lots of indigestible particles. This is problematic way up north because their long cold winters don't allow any

chance for bees to make cleansing flights, so the indigestibles cause dysentery-like symptoms. However, in Piedmont North Carolina we don't have this problem – our mild winters allow frequent cleansing flights – so we love goldenrod honey as a winter food for our bees.

Inside the hive: After taking a short summer respite, the queen will perk up her laying, but not to the extent she did in the spring. The brood will become the long-lived bees that last all the way through the winter.

As mentioned, foragers will pack the hive with goldenrod and aster honey.

As fall progresses, workers will throw out drones. Swarm season is long over and drones aren't needed until next spring, so their hungry mouths are a waste of winter resources.

Management: Fall is a good time to requeen. Colonies tend to accept new replacement queens in fall better than they do at other times of the year. Plus, queens are generally cheaper and more readily available in fall.

The best varroa management strategy is to have “clean”, healthy bees going into winter. To do that, we need the nurse bees that raise the winter bees to be clean and healthy. Doing the bee life-cycle math, that means that varroa must be a non-issue by August/September. Therefore my goal is to use an effective varroa treatment by mid/late August or early September at the latest. My preferred treatments are, unfortunately, temperature sensitive – too hot and they cannot be safely applied – so the exact date of treatment varies from year to year depending on the weather. This is one of many reasons that modern varroa management requires forethought and planning; it must be proactive rather than reactive. See [I Don't See Any Mites](#) for information on treatments.

The article [Controlling Winter Losses](#) describes the three-legged strategy that has served me very well in recent years, virtually eliminating winter losses in my bee yard. Bad luck can befall any of us but effective fall varroa treatment, generous feeding and culling weak

hives will tremendously increase our chances of success. At least it has for me.

Additional tips are found in [A Few More Wintering Tips](#). These include installing mouse guards before the first hard frost (let's block mice out, not trap them in!) and equalizing resources among colonies.

Winter (November, December, early January)

Outside the hive: We may see some plants such as camellias bloom, but for the most part nothing is going on that is of value to honey bees.

Inside the hive: The queen typically won't lay eggs beginning sometime in December through early January.

When the temperature drops below the low 50s, the colony will form a cluster. As the ambient temperature fluctuates, the colony will loosen or tighten the cluster in order to maintain the 95 degrees needed in the brood nest. The mantle of the cluster is a tight mesh of bees; the center is open and fluid, with the bees more or less carrying on business as usual. A large cluster with ample honey stores is extremely well equipped to handle our mild Piedmont winters and does not need any meddling from us, such as wrapping or artificially heating the hives. Rather than being helpful, those sorts of actions can cause a lot of harm to colonies in our area.

Management: Lift hives from the back periodically to assess whether or not they still have plenty of honey stores. If they don't, feed them. Packages of sugar are a whole lot cheaper than packages of bees! Sugar syrup in a 2-to-1 sugar-to-water ratio is the standard winter feed and it works well for us in our area. The article [A Few More Wintering Tips](#) discusses different types of feeders and other ways to feed sugar. How you feed sugar is not nearly as important as that you feed sugar.

Don't pull frames out of the boxes for a full inspection when the temperature is too cool. My personal threshold is the mid 60s; colder than that and I don't pull frames. That doesn't mean we cannot take the cover off and take a

quick look between the frames, and it certainly doesn't mean we cannot remove the cover to feed sugar. Adult bees can easily handle being chilled for short periods of time. Brood cannot.

I cannot think of any good reason to pull frames in winter. If we want to assess the amount of honey stores, we can lift the hive from the back. If we want to see how large the population is, we can quickly lift the cover and peer down between the frames. Easy.

Miscellaneous: Winter may not be the season for hands-on beekeeping but there still is lot that can be done. Enroll in a beekeeping class. Read a good book (I'm currently enjoying History of American Beekeeping by Frank Pellett). Make and paint equipment. Assemble frames. Order packages for next spring.

Start Over

That brings us back to the beginning. How did we do? Are our colonies poised to come out

of winter strong and healthy? If not, is there something we want to try differently next year?

Beekeeping is all about experimenting, learning and adjusting to find what works for us, then embedding what we've learned and expanding on it. Success is best measured by the smile on our faces, not necessarily the pounds of honey in our buckets, number of hives in our yard or dollars in our bank accounts. But at the same time, it is fun to not fail. Are we having fun?

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Climate Durham - North Carolina

°F

	Jan	Feb	Mar	Apr	May	Jun
Average high in °F:	49	53	62	71	79	85
Average low in °F:	28	29	37	46	56	65
Av. precipitation in inch:	4.45	3.7	4.69	3.43	4.61	4.02
	Jul	Aug	Sep	Oct	Nov	Dec
Average high in °F:	89	87	81	71	62	53
Average low in °F:	70	68	60	47	37	30
Av. precipitation in inch:	3.94	4.37	4.37	3.7	3.39	3.43

Source: USClimateData.com