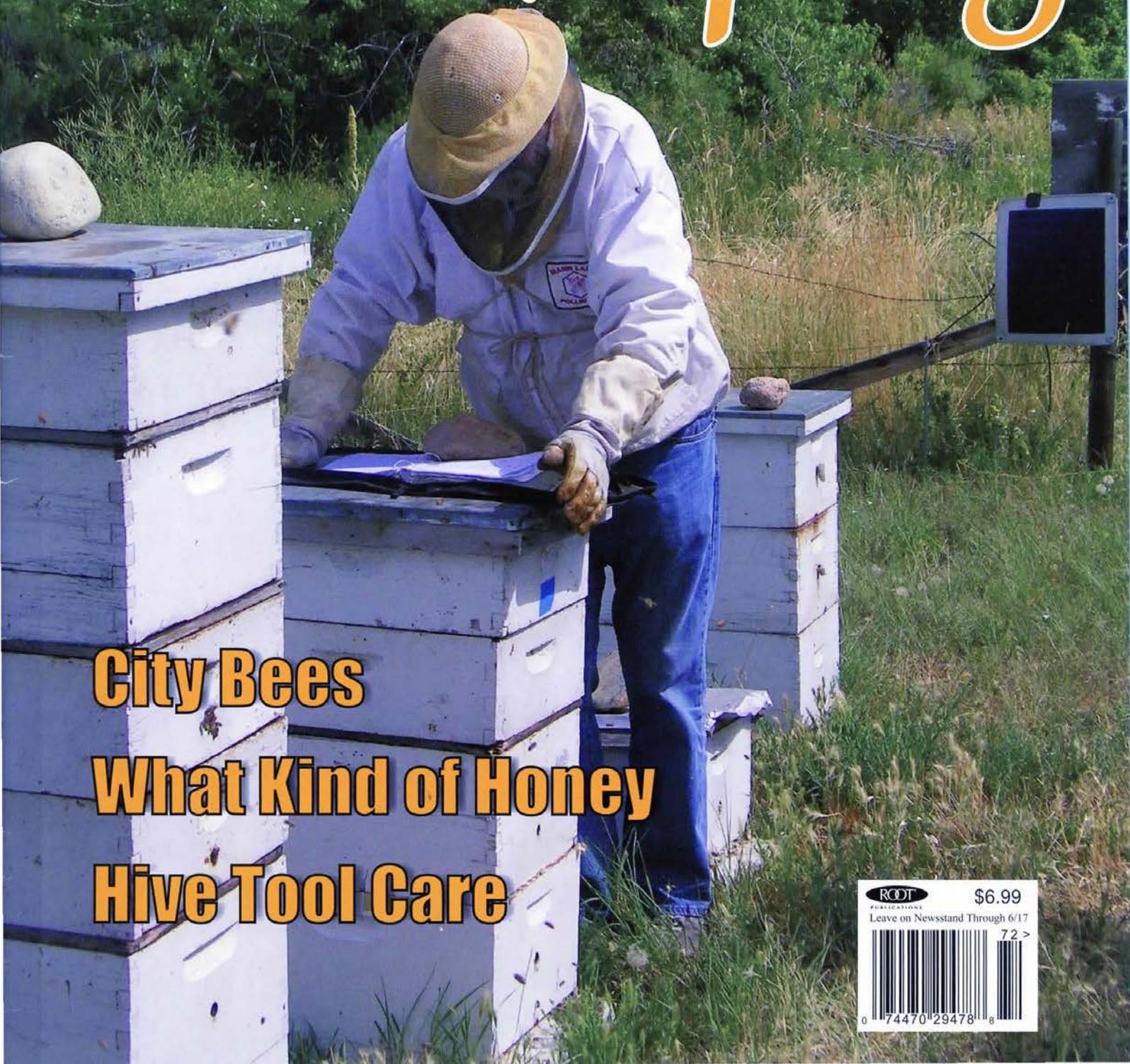


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Your First Three Years

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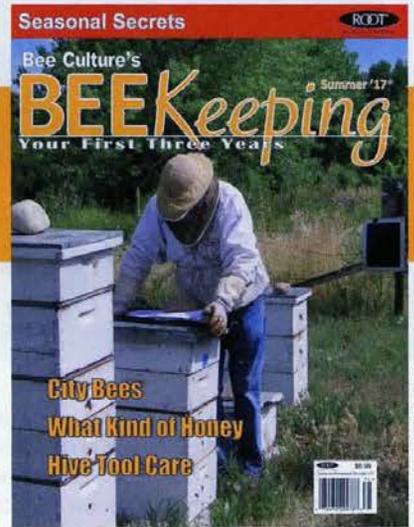
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The promise of things to come. Colorado Beekeeper Tom Theobald, a few years back in a productive beeyard – note the electric fence charger and his notebook – both beekeeping necessities.



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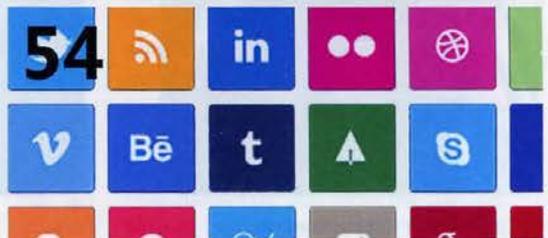
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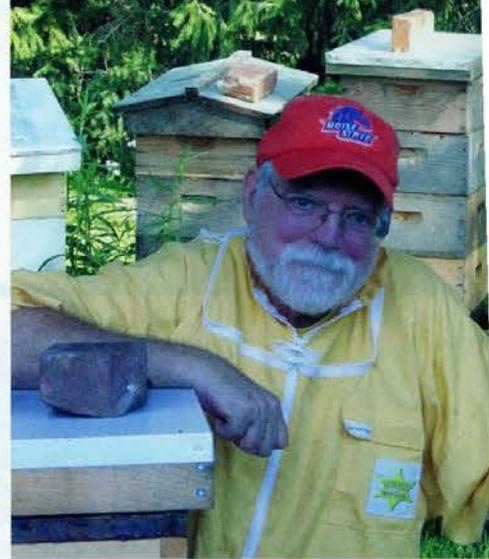
51 It's Hive Inspection Day With My Mentor!

Ann Harman



THE EDITOR'S HIVE

~Kim Flottum



In one of our articles this month we take a long look at taking good care of your hive tool. I put that title on the article...Your Most Useful Tool, because it is just that. Very, very soon you will find that your hive tool becomes the sixth finger on the hand you carry it in, and a third hand all around. It separates supers, pries up inner covers, cleans odd pieces of wax and propolis off anything, removes entrance reducers, pries up very, very stuck frames, and if you insert the short end between two frames and twist you can loosen even the toughest stuck-on frames. In fact, with the leverage a 10" hive tool gives you (don't get one shorter) you could probably move your car.

You may not end up using the most common paint-scraper design tool because there are many on the market, all with special and general uses. Some have handles, some have hooks, some have narrow bars for cleaning between top bars. But no matter which you end up using, you'll find there are a hundred ways to lose them. Left on a hive top, dropped in tall grass, left in the basement to move a widget, borrowed by somebody, sometime, buried on the work bench....they are incredibly easy to misplace. So, my advice is to always have two, or seven. I probably own a couple dozen, at least one of every style, and a whole bunch of the paint-scraper variety. Oh, you will see tools that look exactly the same in paint and hardware stores. They are NOT hive tools.

They are not made of hardened steel and will break, not bend when used to lift a stuck, heavy super. They break, and that piece of broken steel takes off...somewhere. Preferably not your face or hand. Somebody somewhere calculated that when you insert a hive tool only an inch between supers that were very stuck together, and lifted, you were putting something like a couple hundred foot pounds of pressure on the blade. That leverage I mentioned adds up, and regular steel won't hold up. Get the good stuff. And if not already, paint it...neon orange or blue, bright red or neon yellow. You'll know why the first time you get back to the car and find you've dropped it somewhere along the grassy, weedy path. It'll show up.

Your smoker is tied for first with your hive tool for important. It too needs some occasional care. If you don't have one yet, get the 10" size. Smaller is a joke. Period. Depending on your fuel of choice the platform that sits slightly above the bottom so the intake from the bellows has some room can occasionally get clogged with hardend ash. Most models have eight or 10 holes in them to allow forced air into the chamber to be evenly spread out and provide additional oxygen evenly distributed into the fire. Plug up some of those holes and the even distribution goes away and you've got a one-sided fire going all the time. Not good. Check it every once in awhile and if necessary, it is removable, clean the holes. They also sit on, usually three legs, one

or more of which can become bent when you are stuffing fuel in and again, the distribution goes awry and you need to correct.

Oh, it's not uncommon to have the platform come loose and actually fall out when you are emptying your smoker's contents after using. If this is in your driveway it's one thing, if out in a distant roadside, another. Some companies sell missing parts, some don't. Check when you empty so you don't lose it.

The spout will gradually build up a layer of ash and creosote inside, depending on the fuel you use. I burn pine straw exclusively and this produces a lot of creosote. I have to clean out the inside of the snout about every 4th or 5th time I use it with a long screwdriver to make sure the opening stays completely open and clean.

With a bit of care and attention, you'll own that smoker a lifetime. But, hinges break, bellows material cracks and goes bad, heat shields fall off, bellows springs wear out, stuff happens. I have a smoker that's over 50 years old. I don't use it on a routine basis, but it is still the best smoker I own. The bellows leather is nailed (not stapled) to the bellows form and the you could drive a car through the opening into the fire chamber, the platform on the bottom is bullet proof, and the hinge is indestructible. They made them tough back then, tough enough to last. As corny as it may sound, take care of your tools, and they'll take care of you. 🇺🇸

Kim Flottum



Swarm Commander Premium Swarm Lure

Swarm Commander Premium Swarm Lure was created from a passion for making something good better. Our product is the total package when it comes to luring swarms of honey bees. Many swarm lures are simply made from lemongrass oil which will attract swarms of bees but isn't the complete Nasanov formula.

Scott Derrick of Blythewood Bee Company worked in the fragrance and flavor manufacturing world for 18 years prior to becoming involved in beekeeping. "I've used the standard vials of swarm attractant before and found them substandard. I knew I could do better."

Swarm Commander Premium Swarm Lure comes in various forms. The most popular is the two-ounce spray bottle sells for \$29.95. Derrick says you should only spray two sprays on the bottom of your inner cover and one on the entrance every seven to 10 day for maximum effectiveness. The directions should be followed closely. Spraying too much in the hive can have the opposite effect and repel the bees from entering the hive. "Some people have put too much in the bait hive thinking it would help. It doesn't. The swarm will mount under the bait hive."

You can purchase Swarm Commander Super Lure from Blythewood Bee Company at www.blythewoodbee-company.com. You can also call their retail store at 803-754-7577 or email **Derrick** at contact@blythewoodbee-company.com.

ProVap 110 – Sideliner/Commercial Oxalic Acid Vaporizer

Finally, a **FAST** Sideliner/commercial Vaporizer at a reasonable price! We're talking 20 seconds per hive. No wand to insert, just point and shoot. No guessing on dosage. No compressor or battery. Just plug it into an inexpensive inverter, generator or use house current. It's 110 volts, 2.2 watts. This is the one you've waited for and now it's here!

Operation

This vaporizer is most easily used from the back of the hive, where a small (1/4") hole is drilled (3-4 inches up from the center of the bottom of the brood box) to accommodate the vaporizer stem. However, you can use it in the front entrances as well. Using a hole in the back of the hive (we believe) is easiest as it eliminates the nuisance of flying bees. The friction between the stem and drilled hole holds the vaporizer in place during vaporization, which allows you time to prepare the next dose. The bees will readily propolize

this small hole. To vaporize from the front of the hive, simply take a paint stick, cut it to the desired length and drill a 1/4" hole in the center of the paint stick. Slide the stick over the stem and you have an effective vapor block. Connect the vaporizer to your 110 volt power source. It will take approximately 2 minutes to reach operating temperature. The red sequence readout will display 230 when ready.



In the white plastic lids (recess side up) place the appropriate amount of OA. Do NOT pack the OA in the lid; rather place it loosely. Use one gram per brood chamber no matter the size be it mediums or deeps, eight or ten frame. Use 1/2 gram on a nuc. One gram is almost 1/4 teaspoon, so on a two brood chamber hive; you would use 1/2 a teaspoon. Invert the vaporizer.

Take the white plastic lid containing the OA and push it onto the bowl (be careful the vaporizer bowl is very HOT!) Place the still inverted vaporizer stem (with lid attached) into the drilled hole then turn the vaporizer right side up and tap the lid. The acid will fall into the bowl and start to vaporize. This will cause the temperature to drop to approximately 210-215 then very quickly start to rise. When it again reaches 230, it is finished vaporizing and you can move on to the next hive. This will take approximately 20 seconds! You need to seal any openings during and 10 minutes after vaporization.

Safety!

You must use a respirator that is rated for organic acids! Make sure you buy one with replaceable filters. You are going to work in a heavy OA environment. Heavy, heat resistant gauntlet gloves are a must as well.

Want to see it in action?

www.youtube.com/watch?v=yYl63Ak-ou3E

Price: \$485.00.
Visit www.OxaVap.com.



Products

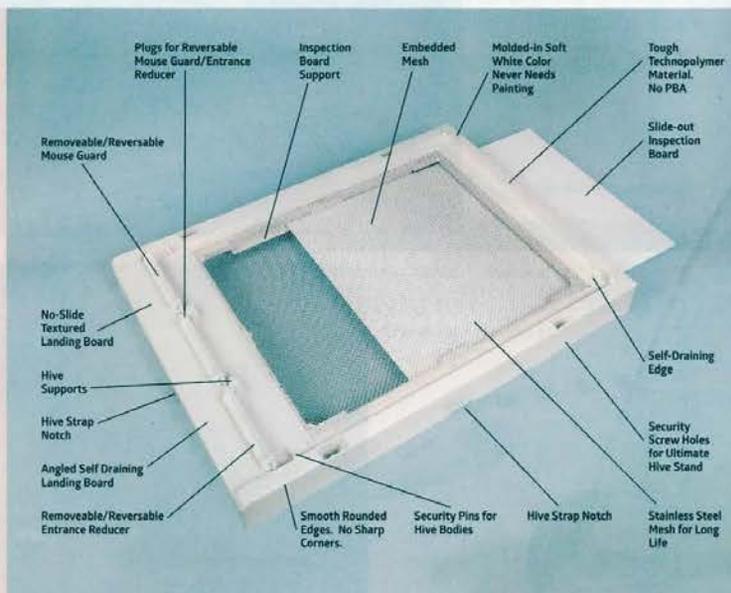
Ultimate IPM Bottom Board System

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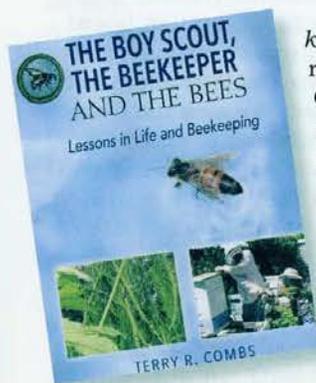
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The Boy Scout, The Beekeeper and The Bees, by Terry R. Combs published by Outskirts Press, Inc. ISBN 9781478761600. 7.4" x 9.7", 277 pgs. Black & White Paperback available at Amazon and Barnes & Noble and www.outskirtpress.com/theboyscoutthebeekeeperandthebees **\$29.95.**

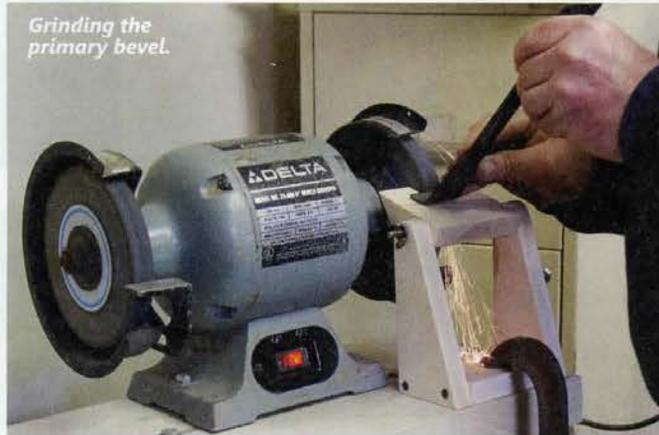
If you've always wanted to start beekeeping but didn't know where to begin, this is the book for you. There's good informa-

tion about how to start beekeeping, and how to expand and refine your craft. Based on the solid protocol of the Boy Scouts of America Beekeeping Merit Badge, this guide takes you through many levels of beekeeping. Whether you're interested in producing honey, helping the environment, or investing in a fascinating and rewarding hobby.

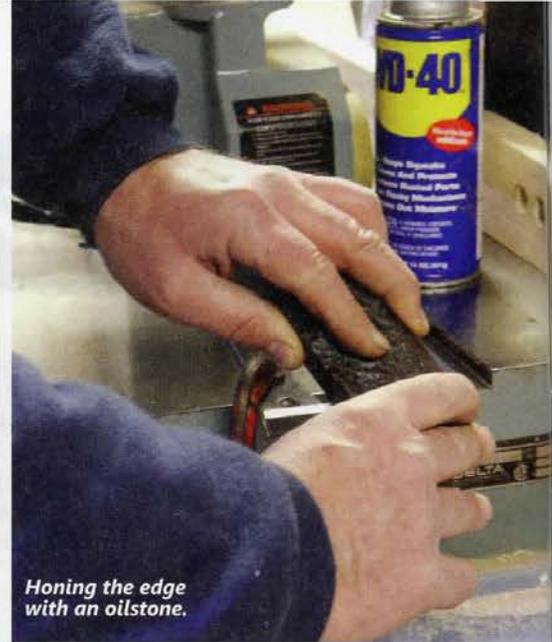
This book is about telling as it has minimal photos. But the telling is instructive without lots of graphics, and covers the basics of getting started, your first year and beyond,

pests, predators and diseases and good management. Good info on all the basics, and strong arguments for facts over suppositions and beliefs. A good epilog on not using chemicals, local bees, using standard equipment, and a caution to big chemical, big government and big ag about the role of beekeeping on the planet. It finishes with a good reference list and a strong glossary. This isn't the only book on beekeeping you need, but it's one of them.

Kim Flottum



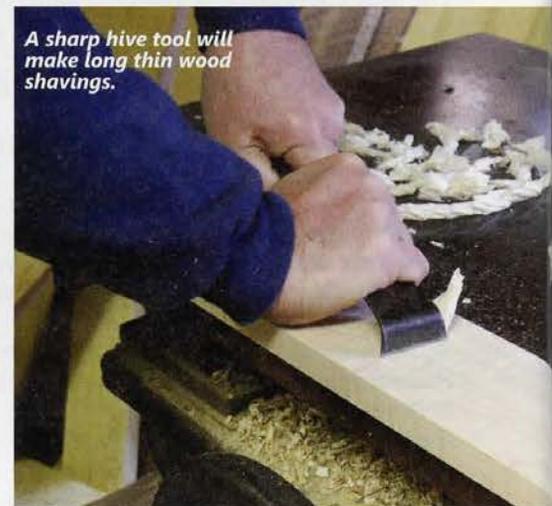
Grinding the primary bevel.



Honing the edge with an oilstone.



Creating the hook with the shank of a drill bit.



A sharp hive tool will make long thin wood shavings.

THE CARE AND MAINTENANCE OF YOUR

MOST USEFUL TOOL

~Peter Sieling

When was the last time you sharpened your hive tool? Have you ever sharpened it? Some beekeepers prefer using a dull hive tool because it is safer. If you only use a hive tool for prying bee boxes apart and loosening and lifting frames, then a dull tool is safer. If you spend a lot of time scraping propolis and wax off frames and cleaning frame rest rabbets, you should at least try a sharp tool.

In Cub Scouts, we learned that a sharp blade, used properly, is safer than a dull blade. After 50 years, I still believe that. A sharp hive tool cuts through wax and propolis in light and easy strokes. A dull tool requires brute force. It may skip out of the cut and unexpectedly skid over the sur-

face. A dull tool will cut into flesh as easily as a sharp tool when it slips.

With practice, sharpening a hive tool takes five minutes or less. You can restore the dull edge in seconds with a rock.

Hive Tool Styles

One of my beekeeping supply catalogs shows eight different hive tools with a wide price range, but they mostly fall into two categories – flat and L-shaped. They all have “nail puller” holes – almost worthless for pulling nails but good for hanging on the wall. The flat style tools have a chisel end for prying apart hive boxes and a lever end for lifting frames straight out of the box. I prefer flat

tools for removing frames, but if you drop one between the frames, it will fall all the way to the bottom board. The L-shaped tools work best for scraping off burr comb from top and bottom bars and cleaning the frame rest rabbets. Buy one of each. They aren't expensive. Better yet, buy two or three. Hive tools are frequently misplaced or lost and a screw driver is a poor substitute.

Sharpening

A new hive tool has been dipped in paint. If it hasn't, paint it with a bright color to make it easier to find when you drop it in the weeds. If the paint covers the tool blade edge, scrape or wire brush it off the tips.

I keep both ends sharp on my L-shaped hive tool and use it mostly for cleaning and scraping. I use a dull flat hive tool for prying and frame lifting. If you have one hive tool, you may prefer to leave the prying blade dull.

There are two steps to sharpening any blade. First, shape the primary bevel, either with a bench grinder, a file, or progressively finer grades of sandpaper (starting with 100 grit and working up to 325 grit). The flat, prying end is shaped like a chisel with an angle similar to plane irons or knife blades: 25° to 30°. The angle isn't as important as it is for a hand plane. You can do it by eye. The L-shaped or scraping blade angle can be less acute: 30° to 45° or even more. Hive tools come with the primary angle already ground, so unless yours is very dull or nicked, you can skip the first step.

The second step is honing a secondary bevel, also called a microbevel, approximately 3° to 5° less acute than the primary bevel. Use a sharpening stone, or finer grades of sandpaper (400 to 600 grit).

The prying blade is ground and honed on both sides. The scraper blade is ground and honed on one side. But the quality of the edge is only as good as the back side of the blade. Hone the back surface of the blade as smooth as possible. If the blade is nicked or pitted, hone a microbevel to the back side.

You can hone the blade several times before the primary bevel needs to be reground. It's time to regrind the

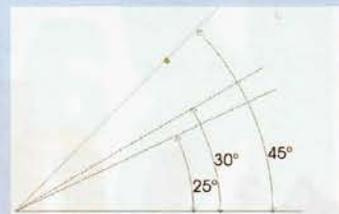
primary bevel when it takes longer to hone a fresh edge than to grind and hone an edge together. If you have to hone for four or five minutes, go back to the grindstone.

Once the scraper blade is sharp, you can form a microscopic hook on the blade's edge, turning the hive tool into a cabinet scraper. To draw out the hook you will need a piece of steel that is harder than the hive tool. You can buy a burnisher from woodworking suppliers, but the shaft of a drill bit or a screwdriver shank will work almost as well. Put a drop of oil on the edge. Hold the burnisher perpendicular to the sharpened edge and draw it back and forth using moderate pressure at an angle that will bend a microscopic burr over the edge (see diagram). Five to ten strokes from one end to the other are adequate. You can feel the hook by drawing your finger perpendicularly across the blade edge.

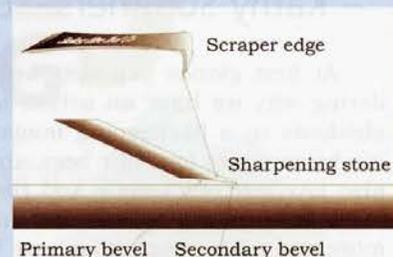
A scraper with a hook works well for bare wood and brittle wax and propolis, but in warm weather it might clog. Remove the hook by stroking the back side of the edge with the shank of a drill bit.

Don't throw it in the tool box to rattle around with metal objects. Treat a sharp hive tool as you would treat a knife. 

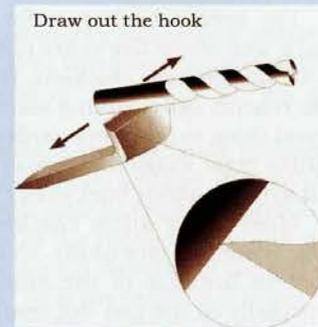
Peter Sieling writes, keeps bees, and sharpens hive tools at his shop in Bath, NY. His books are available at www.makingbeehives.com.



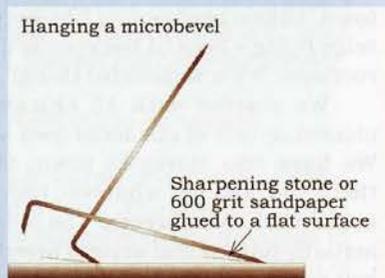
Bevel Angles for grinding hive tools



Primary bevel Secondary bevel



Draw out the hook



Hanging a microbevel

To create the microbevel, raise the tool 3-5° above the primary bevel

Additional Comments

Safety

A sharp hive tool cuts cleanly with less effort and is easier to control than a dull tool. When pulling a hive tool towards yourself, use two hands on the hive tool and anchor the hive in place by pushing against it with your body. When scraping one handed, never place your free hand in the trajectory of the tool. Reach across the hive with the free hand and pull the hive tool away from your free hand.

Sharpening Systems

Manmade abrasives are harder, sharper, and more uniform than any naturally occurring products. They are also expensive. You can buy water stones, ceramic stones, or diamond stones in multiple grits that can range from 220 for rough honing to 2000

or even 4000 for polishing (the higher the number, the finer the polish). If you are a serious hand tool woodworker, the expensive sharpening stones are great and save time, but, at the other extreme, I can hone a razor sharp edge with a carefully chosen stone from my driveway. That's sharp enough for a hive tool.

Sterilizing Hive Tools

Some beekeepers sterilize their hive tool by placing the ends in the smoker or playing a propane torch along the ends. That's good for hygiene but bad for the tool. The hive tool's cutting edge is very thin. When placed in direct flame, it will heat up long before the rest of the tool, annealing the edge. Fortunately there is a large temperature difference between killing spores and

removing temper. With a propane torch, run the flame from the center of the handle out toward but not including the ends – the steel conducts the heat out to the ends. You are aiming for a temperature between 250 and 300 degrees Fahrenheit, hot enough to barely sizzle when dipped in water. When you dip your hive tool in a smoker, you'll lose the temper on the edge, but unless you pump the bellows like a forge, the next time you grind an edge will most likely remove the annealed edge. Better yet, scrub the tool in a bleach solution. The bleach will kill everything except foulbrood spores – those will wash off in the scrubbing. Don't forget that sterilizing your hive tool is worthless if you don't wash everything else that comes in contact with the next hive – your hands, gloves, bee brush, etc.

Kathy's Koop



~ Kathy Summers – Editor

At first glance you may be wondering why we have an article about chickens in a beekeeping magazine. It's because we love our bees and we also love our chickens – and they go together quite nicely. We are finding more and more people who have bees, have chickens.

I've been a beekeeper for over 20 years, and about five years ago I decided we should have chickens. No particular reason, other than it sounded like a good thing to do. Every gardening and nature type magazine I was reading had articles about backyard chickens.

Most cities allow chickens and bees inside the city limits. Usually not roosters because of the noise factor. Especially in the last five years a lot of big cities have decided to allow bees in town. Urban beekeeping has become a huge thing – bees in backyards and on rooftops. It's a wonderful thing!

We started with 15 chicks purchased at one of our local feed stores. We have two stores in town. One of them you just get whatever they have as far as chicken breeds. The other one actually has a list of several breeds and you can special order. So if you decide to get chickens see what's available where you are and what you want from your chickens. They also sell ducklings, geese and some sell guinea fowl.

Are they going to just be a hobby, pets or do you want to make money selling eggs or do you want meat birds so you have a freezer full of home grown chickens for the year?

Like beekeeping you need to decide ahead of time what your goals are and what your capacity is. You can't buy just one baby chick at most feed stores. This is because they are social birds and need other chickens to interact with. So how many do you want? The very minimum should be three, in my opinion and six is a very manageable number for most folks.

I strongly encourage you to do some reading before you decide. Look at the different breeds and their personalities – flighty, docile, aggressive – the books will give you descriptions on all of that

and tell you what color eggs they'll be laying. You also need to look at where you live – get birds that are acclimated to your region. Again, see the similarities between chickens and bees. You also want bees that are good for you region and do want bees for pollination or do you want to make a lot of honey?

Our coop is a permanent structure attached to our garage. We made it bigger this year to accommodate more birds and it has two sections



where I can manage babies and sick or damaged birds that need to be separated from the rest of the flock. But there are literally dozens of different kinds of coops. If there is a Tractor Supply near you they have coops that come in a box. You take it home and put it together.

Of the original 15 birds we have five left. Some chicken keepers would have 'disposed' of them already, but I have a hard time doing that. Our chickens are somewhere between pet and hobby. They don't live in the house with us and they don't have names, but they're kind of spoiled. They have warming lights for those bitter cold nights – we live in NE Ohio – and a heater so their water doesn't freeze. And they get almost all of our table scraps – there are some things you're not supposed to give them, so pay attention to that also. Our chickens are pretty happy.

Over the years we've lost a few to predators, even though we keep them in a pen. That's another decision to make. Are your chickens going to be kept in the coop – we have one friend whose chickens never go outside? Or are you going to give them a designated, somewhat protected space like we do? Or will they be completely free range, meaning you let them out of the coop in the morning and they go wherever they want to go? More choices.

Two years ago we built up our flock again with 12 more chicks and we have 10 that are now two years old. It's time for some new, young ones. The egg laying, just like with the queen bee, starts to diminish after even that first year. So right now we have 15 chickens and some days only get four eggs.

Two years ago we also decided to try some ducks. We saw some really cute small ducks at the Medina County Fair. They are Call Ducks and are much smaller than the regular duck breeds. Some of them are Mallard like in their appearance and others are a pale yellow or pale blue. They are beautiful little birds. When we found out that we could order them locally we jumped on that and got six. With the ducks we didn't have a choice of male or female, so we weren't quite sure what we would end up with.

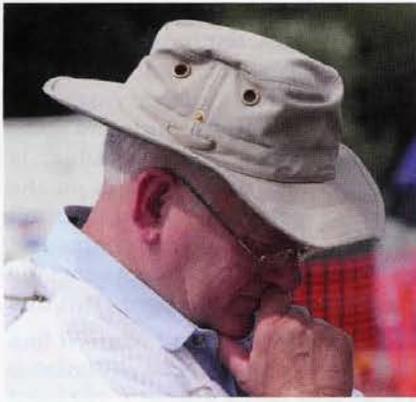
Our duck adventure ended up somewhat tragically. We lost four of the six when they were just a few months old – big enough to finally mingle with the chickens. I'm not sure if they got out of the pen or something got in the pen and got them. So we were left with a male and female that looked exactly like pint-sized mallards. They were gorgeous and so much fun.

The duck couple made it through that Winter quite happily living in the coop with our chickens and running around in the same pen. However the little female duck kept finding ways to get out of the pen. On a somewhat nice day in January she got out and a hawk got her. Now we had just one male duck and 18 hens. He made it through to the Summer and then something got him.

But we're determined to try ducks again this year. We've made the coop and the pen secure and hopefully we can keep them protected and enjoy them for a long time.

We enjoy our bees, our chickens, our cats and our garden. I hope you will too.

Good luck with your bees, and your chickens and I hope you all have a wonderful Summer.



BEE THINGS ARE CHANGING, **really** CHANGING

AND BEEKEEPERS ARE CHANGING, TOO.

~ Jim Tew

This is a terrible time to write an article

I am still in shock, but it is now that time when an article is due, so against my better judgment, I will “*write while rattled*.” (If things don’t pan out, you will never see this piece.) The reason follows.

We expected around 600 participants

At the twentieth annual Alabama Cooperative Extension System Beekeeping Symposium that was conducted on February 7, 2015, we expected about 600 participants. That underestimated 600 number alone is amazing. For those of you new to beekeeping, just a few decades ago, 75-80 participants at a bee meeting was an astounding crowd. Now, having 1000 participants show up is not particularly surprising.

As near as our Alabama meeting organizers can estimate (based on pre-registration and walk-in registration numbers, a *completely* full parking lot, and no handout packets remaining) there were ≈750 participants from Alabama, Tennessee, Georgia, Florida, Mississippi, and one from Kansas. It was a terrifyingly pleasant surprise. Every part of the meeting organizational infrastructure bulged, strained, and creaked, but we hung on – though not without some glitches. (*If you were at this meeting, please know that these shortages will be addressed next year.*)

This meeting-size-discussion is not a boast about attendee numbers, but rather a realization that many beekeeping organizations are crossing the Rubicon of meeting size and organizational structure. Procedures that one time worked to design a meeting structure have increasingly becoming passé and outdated. Organizers have no choice but to change. Large meetings simply cannot be run the way earlier smaller meetings were run

Meeting expectations have changed

I don’t mean for this to be an article on how to run a bee meeting, but rather a piece on, “*What in the world is going on with these huge crowds, and how much larger will they grow?*” How should meetings adapt to meet greatly enlarged expectations, and still stay affordable?

Just a few years ago, the procedure was for a few dedicated people to bake a few plates of cookies – ideally with some honey in them, but even that was not required. In reality, any cookie type would do. To wash the free

cookies down, a few gallons of watery red punch would be offered. Get a speaker, be sure you have an extension cord and a slide projector, and all is good to go. It’s a bee meeting.

Don’t count on that procedure for most state groups today. For instance, at somewhere around 400-500 participants, this food thing will usually require a professional caterer. So here is one of the many changes that are coming to the front – how does a member of the beekeeping group become familiar with the catering business and then bear the responsibility for selecting one? That specialized member resource will vary wildly from group to group. Some hit the mark while others don’t....and then, there’s the increased cost for the catering service.

I didn’t come to this bee meeting to be taught computer stuff!

Presently, beekeepers are in two worlds – those who use electronics and those who don’t. Those who don’t use electronics all that much did not come to bee meetings to be taught to use a QR code or to be given a URL instead of paper handouts. They will readily tell the organizers this fact. They came to talk about bees and learn about bees.

Those who do use electronics – such as email – seem to change their email addresses about once per year, but they are literally blotters for electronic information. They soak up everything digitally virtual. A dedicated club member must devote significant time to maintaining mail lists of both types – surface and electronic. The electronic address list is constantly, constantly changing. Make no mistake, this is a tedious task that someone must do if the beekeeping organization is to promote itself.

But really, it’s always been this way, just not with so many people. During decades past, we sent postcards/letters or we made individual phone calls using phone-call-trees. (*During those years, people actually answered their phones when someone called them.*)

In the future, there will be those who will criticize me “*because he still only uses email*” instead of whatever new communication system is out there. It would, therefore, be wrong to label beekeepers who do not use the latest communication procedure as being out-of-date. Members who have not yet changed will always be among us because communication techniques and procedures will always be changing.





Sorry. Our meeting room does not have Wi-Fi connectivity.

Very politely, let me say that you are probably meeting in the wrong place. No doubt just a few years ago, a Wi-Fi-less room was not a problem, but increasingly, it will be now. It greatly limits what can be done at the meeting. Young beekeepers or technology-literate people will note this shortage.

Surprisingly, the room may be highly equipped for Wi-Fi, but no one knows the log-on information. Now, that's truly frustrating. You can see all of the equipment that is required around the room, but you can't start it up. Honestly, many times, the owners of the Wi-Fi equipment do not want extraneous users to use their equipment. Strange things can happen when strange people begin to tinker with this specialized equipment. If there is an acceptable phone signal at the meeting site, a mobile phone can be used as a "hot spot" for accessing the Internet, but someone must bear the expense of this specialized service.

Then be totally prepared for the Wi-Fi system to fail

So, all systems are a "go" and the electronically subsidized meeting gets under way and for whatever reason – the Internet or some aspect of the system is down and does not work. It happens all the time, but I love to think that the system will continue to get better as time passes. Until then, have an electronic media deck (i.e. PowerPoint) ready or have a DVD of the presentation in reserve.

Indeed, if possible (and it usually is not), the live, offsite speaker, who was going to be live-streamed to the meeting, will have burned his/her presentation to a DVD beforehand and submitted it to the meeting organizers. If the streaming process does not work, run the emergency DVD and have the remote speaker on the phone for discussion after the recorded show. This emergency procedure greatly reduces organizational embarrassment.

Okay, I'm starting to lose you . . .

If I keep going this way, this will really become a tedious piece for you to read. As I move away from the

modern meeting topic, I need to say that I have not covered audio systems and their challenges. Nor have I mentioned multiple, marginally interchangeable computers – each with its own quirky operating systems and varying levels of software updates. Some thumb drives work and some don't. Are all the facilities handicapped accessible? Is there a plan for assistance when someone falls on the stairs? Whose insurance is responsible? How about all the bee club volunteers? The ones who move chairs and put out supply catalogs. The ones you could not get along without their help. How are they acknowledged? But this is enough on this subject for now.

Then there are the program topics . . .

Experienced beekeepers all know the routine topic selections: good queens, mite control, hive design, pollination needs, and honey production are some of the general topics that have been discussed thousands and thousands of times at meetings everywhere. To flavor these traditional topics, secondary topics such as bee trip travelogues, honey marketing techniques, and possibly a discussion on what plants should be selected to provide nectar and pollen for bees, are frequent meeting topics. Honestly, bee-meeting programs are predictable events presenting predictable topics. A good reason for this frequent repeat of a common topic is that there are so many new people. But at this point, I would like to focus on the nectar and pollen source topic that I mentioned.

Respect the nectar and pollen source topic

In my opinion, *selecting nectar and pollen plants for bees* has always been an informative "filler topic." Generally,

this type of talk provides useful information that most people don't get around to implementing. It's much like the topics of making comb honey or producing your own queens. Most beekeepers will never do those two either, but they still want to hear about them. But, I now contend that the nectar and pollen topic should be bumped up to variety topic status. Its time has come.

As beekeeping changes, more and more beekeepers live in towns or cities. The answer would seem to be brain dead – put in flower gardens having plants that your bees will work. In fact, I did that very thing. I bought native flowering plant seeds, tilled up a bit of my back yard and planted these seeds. For the next few weeks, I had open soil as the seeds germinated – not

ugly but not attractive either. (*The birds enjoyed it.*) Then I had growing green plants that progressed nicely. Then I had weeks of beautiful flowers.

Then the decline started. Japanese beetles became more common than bees. The garden became increasingly scruffy and finally became outright unkempt. My neighbors with their perfect lawns and mulched landscape plants noticed my situation. Bottom line here – I simply don't know what I am doing with this flower garden thing and beehive requirements take most of my time. Remember the hypothetical guy that I referred to above

One of the strange tasks the list manager performs is removing deceased member names from the membership list. To me, it is a meaningful series of keystrokes to remove one from the list -- forever. When I was responsible for list maintenance, I would always think about the finality of the situation before I struck "delete."

- I didn't come to this bee meeting to be taught computer stuff! I'm more than a lot like him - only I didn't come to this meeting to be taught all this garden stuff.

Gardeners, I need help here - actually, I need a lot of help. I know there must be some form of "sequential" flower gardening that lets me have various plots of various plant species and ages so that something is always in bloom or will soon be blooming. Additionally, how can I efficiently manage the declining plots without sacrificing my bee time?

I have a typical life including family, grandkids, and friends. I have a bee program to run, and I need to continually learn computer software. I harvest and split firewood. I have a small vegetable garden that the deer and rabbits LOVE. I have a house and yard to maintain, and I do all this as a soon-to-be 67-year-old man. So, yeah, I want to do something with flower planting, but I will never be able to devote the time and energy required to be truly good at it. (*The Master Gardeners of the world are cringing right now.*)

Time and again, I have found British beekeepers to be models for many U.S. beekeepers. It is not uncommon to see photos of classy British apiaries with stone walk paths, beautiful flowering plants, and tastefully painted beehives. In fact, *Bee Culture's Catch the Buzz* cited recent research work showing that urban gardens were significant food resources for pollinating insects. This flower gardening thing is clearly a meaningful topic, but if I am not careful, I will be gently coerced into becoming a flower gardener at the expense of my bee colonies (that are already ignored too much). I would love to see your photos and get your gardening suggestions.

Here's the oddity . . .

The bees are the same now and forever. Other than evolutionary adaptation, they are solidly the same. Rather, it's the beekeepers and our supportive industry that



Flowering plants at an arboretum. It was too cool for bees.

are radically changing at this time. How we conduct our meetings, how we distribute information, where people are increasingly keeping bees, the number of new companies that are committing to beekeeping, the way we acquire our bees, and the greatly increased awareness of the importance of bees are some of the factors that are stunningly different compared to just a few decades ago. You must be an old beekeeper to see these changes. For those of us who can see them, the changes are stunning and invigorating. 🐝

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CATCH THE BUZZ

Researchers Recommend Organic Agriculture for Human Health



In a review of existing research, commissioned by a committee of the European Parliament, a group of European researchers has identified benefits of organic food production for human health. The researchers recommend the parliament to consider giving priority to certain organic production practices and their use also in conventional agriculture.

This recommendation comes from a one-year study resulting in the report 'Human health implications of organic food and organic agriculture'. The experts

list several advantages of methods used in organic agriculture that benefit human health.

The support of animal health and the restrictive use of antibiotics in organic animal production lead to a lower risk for the development of antibiotic resistance in bacteria, which is a major public health threat. Preventive measures of plant protection and restrictions of pesticide use in organic agriculture lead to a decreased pesticide exposure of consumers, with benefits for human health.

Content of nutrients

The experts also conclude that slight differences in the content of nutrients and other beneficial compounds between conventional and organic foods likely have no major implications for human health.

The work behind the report was coordinated by Assistant Professor Axel Mie, affiliated to both Karolinska Institutet and the Swedish University of Agricultural Sciences. His conclusion is clear:

"Several practices in organic agriculture, in particular the low use of pesticides and antibiotics, offer benefits for human health", he says in a press release from the Swedish University of Agricultural Sciences. "Policymakers should support the use of such practices and their introduction in conventional agriculture, and make sure that organic agriculture continues to serve as a laboratory for the development of future healthy food systems."

Read more at: <https://medicalxpress.com/news/2017-01-agriculture-human-health.html#jCp>

seasonal MANAGEMENT

EVERYTHING YOU NEED FROM MARCH TO WINTER

~ Roy Hendrickson

This article describes my bee work starting March 1st and running through the remainder of the season. With the exception of mite control, (The mite control practices I describe are current, although they're subject to instant revision as need dictates) the management practices I describe duplicate those I used while operating a 300 colony honey production operation from the late 1970's through the year 2000. For simplicity I'll average the timing of various manipulations thereby eliminating the normal variations that occur from season to season. The reader will have to make the necessary adjustments to compensate for discrepancies that occur between different operating territories.

My operating territory lies roughly fifteen miles south of Lake Erie approximately thirty miles east of Cleveland Ohio. As a result of the northerly winds that continually sweep across the cold lake; my spring build-up period is dominated by cold, wet, nasty weather. As a general rule the first pollen makes its appearance around mid March, it will be at least another month before any serious bee work can begin. In the meantime I'll work on the many chores that don't require decent weather. The first order of business is to assemble needed equipment, most notably frames and foundation, along with the myriad odds and ends that are required throughout the season. Weather permitting, winter deadouts will be moved into the shop for repair or painting. Brood combs are carefully sorted. Older damaged combs, or combs with too much drone brood are scrapped. (I don't attempt to salvage frames or plastic foundation.) Honey filled combs (more than half full) are set aside for emergency spring

feeding, or as feed combs for the early splits. The remaining combs are stored until needed for colony equalization or split make up. Due to the cold temperatures no moth control measures are required at this time. Combs not reused by late June will be treated to prevent any possibility of moth damage.

Once the snow recedes, I'll heft the colonies from the side to check the food reserves. Spring syrup feeding is not practical in this area due to frequent bouts of cold weather. Plus, I've largely eliminated that need by

enough to open colonies. The first order of business is to check colony condition and start the mite sampling process. (Whether due to drifting or nearby colony collapse, late season mite transfer can wreck havoc the following spring. Failure to take this threat seriously can spell colony doom by mid to late July.) My preferred sampling technique is a 150 bee alcohol wash as opposed to the standard 300 bee sample size. I believe the smaller sample provides a more accurate mite count, plus it only requires half as many bees. At any rate, if the mite count exceeds my early spring treatment threshold, (2 mites per 100 bees) I'll treat with one formic strip (MAQS) per colony, placed between the brood boxes, (MAQS can be used with supers in place) or with 25 grams of Apiguard placed on the top bars of the uppermost brood box. With Apiguard it's necessary to add a spacer (1½ - 2½ inches deep) to allow the thymol to vaporize evenly throughout the colony. If necessary, apply a second treatment of either product 14 days later. This will provide a 21 day treatment window with an expected 90% or better efficacy rate. Spring treatment with Apiguard or any of the other mite control products should be completed prior to supering.

Spring Management

By late April or early May the strongest colonies will be ready to equalize. (Equalizing refers to the practice of removing excess brood and adult bees from strong colonies, and then using those resources to boost weaker colonies, or to make up splits) Successful colony equalization requires three basic beekeeping essentials, a degree of analytical skill, an ability to identify the queen, and



Emergency feeding, wet sugar placed directly above the cluster

feeding copiously the preceding fall. If emergency feeding is required I simply exchange frames of honey for empty comb in the immediate brood-nest area. If frames of honey are in short supply I'll feed wet sugar. (Mix cold water and granulated sugar to a consistency of wet gravel. Place the mixture on wax paper, directly above the cluster. Flip the inner cover over, or add a spacer to provide the necessary accommodation space.) Sugar fed in this manner is the equivalent of fondant or a winter feed patty, and at a much more reasonable price.

Sometime around the middle of April the weather will have warmed



Typical frame of brood used for split makeup, (adhering bees removed for photo)

some form of resource transport. The analytical skill refers to the act of estimating a specified amount of brood. For example, my definition of a full frame of brood is a deep frame, with both sides two thirds filled, with anything from eggs to emerging brood. For example, six weeks prior to the start of the main honey flow you want to leave the equalized colony with the equivalent of four frames of brood. But the colony in question has brood unevenly distributed over nine frames between two deep brood boxes. Your job is to estimate, then remove the excess brood and adult bees so the remaining colony is approximately the desired size. The first time you try this, deliberately underestimate. You can always return and make further adjustments. In practice, the idea is to remove frames that contain the oldest brood and adhering bees. And for every frame of brood you remove, shake bees off an adjacent frame of brood. That way you're equalizing both the brood and the adult population. This will in turn reduce the swarming potential of the overwintered colony, and the receiving colony or split will get an immediate boost from the extra bees. Five weeks prior to the flow you want to leave the equalized colony with five frames of brood and accompanying bees. Four weeks out leave six frames of brood. Six frames of brood equates to a full hive body, although it will never appear that tidy. This simple equalization formula worked exceedingly well during my commercial years. Give it a try.

Colonies can be equalized any time prior to the start of the main honey flow. However, the closer the flow, the less brood you remove. If you remove too much brood too close to the flow, the colony will fail to reach or maintain honey production strength. Instead, focus your efforts on the adult bees. For every frame

of brood you remove shake bees off two or three additional frames of brood. In other words, you want to remove a good portion of the bees that would otherwise leave with a swarm! In summary, colony equalization sounds complicated, but with a little practice it will quickly become just another colony manipulation.

There are times when locating the queen is an absolute must. When equalizing, it isn't necessary to locate the queen, just make sure you don't transfer her along with the brood and adult bees you remove. (If you inadvertently remove the queen an emergency supercedure will be initiated, and that will severely reduce or eliminate that colony's production potential) Brood rearing is paramount during the spring buildup period, so early in the season the queen is almost certain to be found in that portion of the broodnest that contains eggs and very young larvae. When examining frames, ignore the young brood; instead focus on the portion of the broodnest that contains the older brood. That should minimize the chances of coming into contact with the queen. As the broodnest expands, the queen increases her range accordingly. This is where it can get a bit tricky. Carefully scan each frame you intend to remove or shake. If a frame lacks eggs or young larvae, chances are pretty good the queen isn't there. The danger lies with frames that contain a mixture of older brood along with eggs or very young larvae. The queen could very well be on that frame, or in the immediate vicinity. Quickly scan each side of the frame, as well as the face of the next comb to be removed. If no queen, tilt the frame horizontally so that you're looking across the comb surface. Queens and drones stand taller than workers. With a little practice they're quite easy to spot. Of course your chances of spotting

the queen will improve drastically if she is marked with a bright color, white or bright yellow are very easy to spot. If possible replace the combs you remove with drawn comb, not foundation. If foundation is your only option, place it to the outside of the active broodnest. If placed in the center it tends to divide and inhibit broodnest expansion.

For maximum efficiency the brood and bees that are removed through the equalization process should be relocated to another location. Otherwise the older bees will return to the parent colony, thereby negating a lot of time and hard work. A couple suggestions: for one or two colony operations a five frame nuc



Two frame split with extra bees after queen cage removal

box fitted with a screened bottom board should suffice. For larger operations, because you're going to be transporting lots of extra bees, and they generate heat, you might consider altering the nuc box. Omit the screened bottom. In its place extend the ends of the nuc box downward a couple of inches, and install 8 mesh screen along the sides. This will provide both additional clustering space and abundant ventilation.

Split make up

As with any beekeeping function, there isn't a single "best way" to make a split. However, weather limits the choices for those operating in more northern locations. The following describes my split make up procedure.





Moderate amount of burr comb between the extracting supers

Adjust as you deem appropriate. All my splits are housed in five frame nuc boxes. The initial input consists of two frames of brood and plenty of extra bees. A frame of honey and two empty combs round out the unit. A caged queen or mature queen cell is installed once the unit has been moved to a new location. The smaller nuc box confines a portion of the heat given off by the cluster. This allows the young queen to expand the broodnest at a much faster rate than would be possible in larger equipment. Once the new queen's brood starts to emerge, the colony will immediately require additional comb space. This is a prime example of a relatively weak colony that will readily draw foundation. If you're in need of drawn comb, simply add a second five frame box of foundation. If there's a honey flow in progress, you're all set. If not, feed 1:1 syrup until the flow begins. By the time the foundation has been drawn out, the season will have progressed to the point where you can safely transfer the nuc into standard equipment. If foundation is not an issue, fill the second box with drawn comb. You'll be amazed at how quickly the small colony will grow.

Timely supering is every bit as important as equalization when it comes to swarm prevention. Supers provide the colony with two immediate benefits. They supply storage space for incoming nectar that would otherwise end up in the broodnest. Plus, they provide a parking or resting space for the legions of emerging bees. Without supers, these bees, like incoming nectar, will plug up the broodnest. And guess what, swarm preparations are initiated! The first super should be added, above an

excluder, the day the colony is equalized. When the bees cover five or more frames in the first super, add a second. Once the honey flow begins, add another super when the top super has bees actively working on six or seven frames.

What about foundation? Most new beekeepers lack drawn super comb

so foundation is the only alternative. If that's your situation, forget the excluder and place the foundation directly above the broodnest. In time the wax producers will begin drawing comb. Once the bees are working on seven or eight frames add another super. With any luck you should have a couple supers of drawn comb by seasons end. The following season you can use the baiting technique to expedite new comb production. Baiting is the practice of using drawn comb to entice the bees up into the foundation super. Generally two or three empty drawn combs are transferred from the outside of the uppermost super into the center of the foundation super. The displaced frames of foundation replace the drawn comb in the lower box. Once the storage bees begin filling the bait combs, it won't be long before the wax producers start working on the foundation. Once you gain an adequate amount of drawn super comb, life in the backyard becomes a whole lot easier.

Crop Removal

The main honey flow in this area runs from the first of June through the fourth of July, give or take a few days. Due to the potential for significant mite buildup I make every effort to remove the crop at the earliest opportunity. Clearing bees from honey supers can be one of the more challenging beekeeping tasks. There are a variety of bee removal options. Generally, experience coupled with the number of colonies involved will determine the most practical method. Most new beekeepers start with the brushing method. The problem here is the commonly available bee brush (The yellow bristle model) is too stiff. When you brush heavy concentrations of bees off a comb you tend to

roll the bees, irritating them to no end. By the time you've reached the third super you're dealing with the equivalent of Africanized bees. Instead, give the frame a quick shake, above the entrance, prior to brushing. This should dislodge most of the bees and noticeably speed-up the removal process. Another option is to remove about half of the brush bristles with a pair of scissors or a utility knife. This will soften the brush and lessen the bee irritation during the brushing phase.

Once you reach the five or ten hive plateau and you're extracting twenty or more supers, the shake and brush method starts to get a bit laborious. At this point the use of a blower becomes a viable option. In general, blowers are more efficient when the supers contain mostly capped frames with a minimum of burr comb. Burr comb, the connecting comb between supers, is the real detriment to efficient super removal. Once burred-up supers are separated, free honey is everywhere. From this point on, bee removal with a blower becomes a very slow, sticky affair.

Enter the fume board. When coupled with a blower, fume boards give the beekeeper the latitude to clear supers in short order. Used properly, a fume board will drive the bees out of two or three supers at a time, eliminating the need to deal with masses of sticky bees. The following fume board basics have served me well. Use



Fume Board in place

boards with a metal cover, and paint the cover flat black to improve heat absorption. Heat vaporizes the repellent causing the bees to move downward to get away from the fumes. If your colonies are partially shaded, place the board in direct sunlight prior to, and between applications. If the top super is only partially filled or mostly uncapped, remove and set it off to the side on the upturned outer cover and leave the inner cover in place. This will eliminate any robbing potential. With the blower running at maximum rpm, direct the airflow downward through the frames in the top super. This will force the exposed bees to move downward. Now apply the fume board. Wait a couple minutes, remove the board, and then lift the back of the super. Use the blower to remove any strays, including those



Feed holes punched in lid of 10lb feed can

noxious. In the event of a spill or accidental contact, the odor tends to linger. Thus it can't be shipped via UPS or the U.S. mail, so acquisition is through direct pickup only. (Contrary to popular belief it's not the repellent odor that drives the bees out of the supers. The fumes burn the bee's eyes and that's the motivating force) Bee Dun and Fischer's Bee Quick are less objectionable and can be shipped without limitation. Odor aside, I much prefer Bee Go. I believe it works better under marginal weather conditions.

late season mite transfer from nearby collapsing colonies. I have a friend who had that experience last year. He treated a light mite load (1-2 mites



Full Strength MAQS treatment

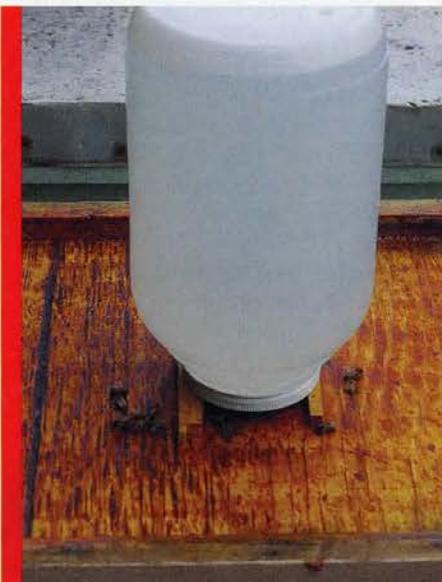
lodged between the end bars and the super wall. Occasionally the upper super(s) even though fully capped, will be packed with bees. Use the blower as described above to start the bees moving downward, and then apply the fume board. However, in this event turn the board so the corners of the super are exposed. This added ventilation will prevent the fumes from overwhelming the large number of bees.

There are two basic types of repellants, Butyric Anhydride commonly known as Bee Go, and oil of almond, the primary ingredient in Bee Dun and Fischer's Bee Quick. Both are effective when used correctly. Effectiveness aside, there are major differences between these products. To many the odor of Bee Go is quite

Varroa Control

Once the crop has been removed, it's back to mite control, and now we're playing for keeps! Depending on your number of colonies, the number of nearby colonies, and the treatment attitude of your neighbors, your mite control approach can range from no big deal to deadly serious. By mid to late July mite loads can easily reach the 4-6 mites per hundred bee's threshold. At that level, failure to treat immediately will usually result in dead colonies by the end of the year, and on occasion a month or two earlier.

With a couple of exceptions my treatment regimen remains the same as in the spring. For heavy mite loads I'll apply the full strength MAQS treatment instead of a single strip at 14 day intervals. With Apiguard I'll apply a 25 or 50 gram treatment depending on the projected temperature, (50g above 77 degrees, 25g below) and I'll definitely apply a second treatment in 12-14 days. However, one mid-summer treatment isn't nearly enough to counter the



Gallon jug feeder elevated above inner cover center hole

per hundred bees) in late July, with full strength MAQS, and figured he was done treating for the year. Four of his twelve colonies were dead by Thanksgiving; the remaining eight were dead by the New Year. Why? Mites had transferred via drifting and robbing from (numerous) nearby untreated colonies! (Recent research indicates that mites can travel up to two miles from a collapsing colony) As a result I'll sample, and in all probability treat again in late August or early September. And this time I'll alternate products. In other words, if I used MAQS in July, I'll switch to Apiguard in August and/or Septem-



ber. Last year I treated three times, alternating between those two products, with great success. Failure to do anything less would have resulted in wholesale disaster.

Back when I was running bees on scale, July through September were consumed with crop removal and extraction. Nowadays my schedule is much more relaxed. I actually have time to monitor the comings and goings of my bees. Barring a mid-summer drought this area has an abundance of pollen producing plants. As such, I pay attention to both the levels of incoming pollen, and the average amount of stored pollen. (I check the pollen band whenever I open a colony) Good nutrition is an integral part of any successful mite control program. Consequently I'm prepared to feed pollen substitute should the need suddenly arise. Mid to late summer is also an ideal time to replace questionable or failing queens. A young queen will provide the colony with an abundance of young bees going into winter, one of the prerequisites for successful overwintering. Mid summer is also the perfect time to make up spits for next season's use.

Feeding

By the first of September the summer dearth is coming to an end. Although Goldenrod has been in bloom for over a month, its golden yellow pollen is but a recent addition.

If the weather cooperates, incoming nectar should arrive by the tenth. Regardless, September is winter stores month. If the colonies lack the necessary winter food reserves by month's end, it will be a grim winter indeed. As a result, summer splits are supplied frames of honey at make up, and fed sugar syrup when necessary. Likewise, lightweight colonies are fed as need dictates. Come September 1st I start feeding heavy syrup to the neediest colonies. If the Goldenrod fizzles, the feeding intensifies. I keep at it until I'm satisfied, or until the onset of cold weather halts the proceedings. I don't attempt to weigh colonies. The correct weight is determined by lifting each colony from the side(s). This is an experience thing, and it's relative to the operating territory. One suggestion, if you have trouble lifting a colony, it's probably heavy enough. You might also check with a couple of longtime local beekeepers as to their winter weight recommendations.

All feeding is accomplished through the center hole in the inner cover. Feeding in this manner is simple, economical, and extremely efficient. My primary feeder is a 10 lb friction top honey container. (No longer available) A quart Mason jar or plastic gallon jug with a metal lid, will work equally well. The rate of syrup consumption is controlled by the number of holes punched in the lid. The more holes the greater the

rate of syrup consumption. Ideally the holes should be about 1/16 of an inch diameter, or about the size of a standard frame nail. Use either 4 or 6d nail and a tack hammer, and tap the nail just hard enough to drive the point partially through the metal lid. The bees tend to propolize the holes in plastic lids, but if they're your only option, use a 1/16 or 3/32 inch diameter drill. In use, elevate the feeder a quarter of inch to allow the bee's full access to the feed holes. Use a hive body or a couple of supers to protect the feeder from the elements. With this system, once feeding has commenced, it's often possible to replace or refill the feeder without the use of a smoker or veil.

Winter Protection

When it comes to overwintering success, the importance of good windbreaks is second only to adequate food reserves. Colonies that are under constant wind stress simply do not overwinter very well. The further north you're located the greater the potential for damage. Thick woods, heavy underbrush, or a solid fence row all create ideal windbreaks. Colonies placed downwind at the base of a hill are usually well protected. In heavy snow territory these locations are often buried by drifting snow, thereby creating the best natural windbreak of all. I classify man-made structures as natural windbreaks.

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Photo Credits: Jennifer Smith, Lexington, VA



2 3/4 inch opening provides both upper ventilation and winter flight access

Apiaries located on the leeward side of a barn or out building generally fare very well. Absent a natural windbreak, you'll have to conjure up something. A few well placed bales of straw make an excellent windbreak. Old aluminum storm doors placed lengthwise behind exposed colonies are quite effective. My favorite man-made windbreaks are old shipping pallets. I cut the pallets in half and use deck screws to attach pieces of scrap plywood. They're held in place by short lengths of pipe or metal fence posts.

By late October the weather has cooled to the point where it's possible to install the top insulation. (It's much quicker to make the transition if the bees are clustered) In cold climates top insulation has at least five identifiable benefits. First, the insulation traps a portion of the heat given off by the overwintering cluster, thereby preventing any frost or ice buildup. Similarly, the combination upper entrance / ventilation port allows the warm moist air to vent, virtually elim-

inating any condensation buildup on the top bars or the underside of the inner cover. Third, the retained heat increases the cluster's ability to move and access the stored food reserves. As a result, colonies supplied with top insulation are much less likely to cold starve during the depths of a long cold winter. Fourth, the upper entrance allows for easy outside access whenever the weather warms enough for a cleansing flight. And last of all, top insulation allows a colony to rear more brood in the cold of early spring than would be possible were insulation not present. If possible allow the colony to benefit from the top insulation until average daytime temperatures reach the fifty-five to sixty degree range.

For small beekeepers the most practical application of top insulation is between the inner and outer covers. I recommend two inches of high-density Styrofoam of the type commonly sold in big-box lumber stores. Buy the one inch thickness, and cut two pieces that fit inside the raised border. Use woodworker's glue (Titebond II) to glue the two pieces of Styrofoam together. To prevent the bees from chewing up into the insulation, cover the inner cover center hole with a piece of window screen. Once the insulation is in place, the outer cover is returned to its normal position on top of the insulation.

The final step is to create the combination upper entrance / ventilation port. Nowadays virtually all commercially manufactured inner covers have a raised border on both sides. Select the side with the thickest border. If necessary, add a thin

strip of wood to increase the border height to 3/8th of an inch. Locate the center line on the front of the cover and remove a 2 3/4 inch section of the border. In use, this side is turned down so that the bees have direct access to the outside. If you were to shine a flashlight into the opening, you would be looking directly at the top bars of the uppermost brood box. Caution: Do not allow the outer cover rim to obstruct the upper entrance. If it does, either cut a notch in the outer cover rim, or add another layer of Styrofoam.

For those operating in the more northern latitudes, it may be prudent to consider some form of colony wrap. Wrapping the colonies is the last job of the season, and this usually occurs in mid to late November before everything freezes up. Over the years I've gravitated from 15lb roofer's felt to Colony Quilt, a wrapping material supplied by B&B Honey Farm in Houston, Minnesota. This is a plastic based wrap combined with a thin layer of insulation. It's durable, easy to cut, and easy to apply. Although the cost is somewhat higher than roofer's felt, I believe it is money well spent. In use, the pre-cut wraps are temporarily secured with a couple of half inch staples or clear packaging tape. Overwinter security is achieved by wrapping the colony with plastic bailing twine. (For a complete over-wintering article, Google: Winter Preparation, followed by my name) Happy Beekeeping! 🐝

Roy Hendrickson has been keeping bees for over 30 years and lives in Chardon, Ohio



Ideal man made windbreak



Inner cover in the winter position, with insulation in place



Wrapping in place, snow will cover the bottom entrance throughout the winter

MORE ON SPRING

IF YOU'RE USING NUCS, YOU HAVE TO FEED THEM, HERE'S HOW

~Ross Conrad



Throughout the Northeast, the month of June is typically a time full of swarming activity. The clover and alfalfa (that hasn't been cut) is coming into bloom, hives that have not been provided with additional space to expand are getting crowded, and the weather most days tends to be warm and sunny.

Beekkeepers who planned ahead, anticipated this situation and made up splits or nucleus colonies during May. In doing so, they provided room for their colonies to expand which helps to delay the swarming impulse. June is also the time when the nucs that were created in May need to be inspected and managed.

There has been a move by some in recent years to a system of making up nucs that are kept in reserve from Spring through Autumn, and whose worker bees or frames of honey, pollen, or brood are used to beef up weak colonies. Others may use spring nucs as a source for queens, that can be used to requeen colonies that have either gone queenless, or have queens that are judged to be inferior. My tendency is to raise spring nucs either for sale, to help expand my apiaries, or make up for Winter losses.

Rather than make a split and try to introduce a queen and get the workers to accept her, I prefer to leave my splits to raise their own queen from young larvae or eggs that were provided at the time that the nuc was made up. May is the ideal time to make nucs in the Northeast if the intention is to allow the nascent colony to build up and store away enough honey on their own to get through the upcoming winter. June (about 30 days after the nuc is first created) is therefore the month when nucs need to be inspected to see which ones successfully raised a new queen and which ones failed to do so.

Since a nuc typically consists of only four or five frames, a queen is relatively easy to find in a nucleus

colony. However, it is not necessary to find the queen to confirm that she is present and has mated successfully. One only has to find eggs, laid one per cell, standing at attention in the center of the back of the cell to know that a fertile queen is present. A new queen just starting to lay her first eggs may sometimes be confused with a drone layer. This occurs when the new queen misses the back of the cell and hits the side, lays eggs that flop over on their sides rather than stand on end, or lays more than one egg per cell. When such signs are observed and raise questions as to the fertility and viability of the queen, I like to wait an additional week or so before checking again to see if the new queen was just learning the ropes, or is actually in no condition to be able to lead the colony.

Sometimes when inspecting nucs for a lying queen, sealed brood is present. This is especially common when queen cells are included in the nuc when it is being created. The presence of sealed worker brood makes it easy to determine if the eggs that the queen is laying are fertile or not. The presence of capped drone brood may mean that a fertile queen is not present in the nuc, however this is not always the case. Sometimes, a new queen that has been recently mated will lay some infertile eggs that the workers raise into drones. This happened to me last year when I found capped drone cells while inspecting my nucs for fertile queens. Thinking that they were unsuccessful in raising new queens and were drone layers, I left them alone, with the plan that I would use them later



to boost up the populations of other weak hives that were queen-right. A week or two later, when I opened up the nucs to combine them with my weak hives, I was surprised to discover large areas of capped worker brood. There was drone brood here and there, but clearly the queens leading these nucs were indeed fertile. It is important not to jump to conclusions too quickly when finding sealed drone brood in a hive that should have a newly mated queen.

When nucs are created properly and at the right time of year, 70 percent or more of them can be expected to successfully raise a new queen on their own. When a virgin queen fails to successfully mate for some reason, I like to use the remaining bees, and frames of honey and pollen to strengthen a colony in need. Sometimes the colony in need is a weak hive that can benefit from the influx of new bees and/or food resources, and sometimes the queenless hive is combined with a nuc that has just recently raised their own queen. The boost in population and the addition of combs filled with honey and pollen give the nuc a big boost in getting them prepared for the Winter. It is recommended that newspaper be placed between two colonies that are being combined so that the bees will have time to get used to each other while they are chewing away at the paper. No newspaper is needed when combining a queenless nuc and a queen-right nuc since there is no queen in the queenless nuc fighting among workers from the differing hives who smell the scent of a different queen does not take place.

When a nuc is successful in raising a new queen, the best way to use the nuc to re-queen a hive is to simply combine the bees and combs from the queenless colony with the nucleus colony. As long as one of

the hives being combined has been queenless for at least a day, I don't worry myself with using newspaper between the colonies. Even colonies that have been queenless so long that they have become drone layers can be combined with a nuc that has a fertile mated queen who is actively laying. As long as the cluster of bees in the nuc are not disturbed too much during the combining of the hives, the bees in the queen-right hive will protect their queen from the bees in the drone layer hive until eventually the workers from the drone laying hive get used to the new queen, accept her and cease their drone laying ways.

Once a nuc has been confirmed to contain a fertile and laying queen, the focus for me is to get them ready for Winter and that means lots of honey. I like to wait until a nuc has filled up eight of the 10 frames in its hive and are working on the last two frames *before* I add another super. This way, I am able to add additional space to the hive just before the colony is likely to need it. When addi-

Once a nuc has been confirmed to contain a fertile and laying queen, the focus for me is to get them ready for Winter and that means lots of honey.

tional supers are added to a hive that has filled up less than about 80% of the hive body they occupy, the bees often ignore the frames on the outside edges of the hive body and get to work filling up the frames in the super above. This creates a chimney effect, where the bees fill up and cap the center combs with honey and leave the combs on the sides of the hive empty. By reducing the chance for empty space to occur in the hive going into Winter I eliminate a lot of time and money spent on feeding. In addition, when the hive is chock full, the wintering bees are less likely to eat their way into an empty corner and starve before Spring.

It used to be that a single shallow super full of honey on top of a deep hive body filled with bees, brood, honey and pollen was enough to get most nucs through a Vermont

Winter, however this seems to be changing. Recently, Winters have been unusually mild, resulting in hives being more active than normal and requiring more food stores than normal. This past Winter however, was unusually harsh filled with dramatic temperature swings and long bouts of cold that kept the bees from making cleansing flights and delayed the onset of Spring-like weather and its accompanying plants to forage on. In both these cases, additional food is needed to ensure colony survival over Winter and a strong hive coming into Spring. This is why I have started to leave two shallow supers full of honey (the equivalent of one deep super full of capped frames of honey) above the brood chamber on each hive in Autumn. I find that the peace of mind that comes with not having to scramble to feed the bees and knowing that my hives have plenty of food is more than enough compensation for the loss of additional honey harvested. After all, not leaving enough honey on the hive in Autumn and instead feeding during the Winter is challenging. It can be hard for the bees to move to the feed, the excess moisture from syrups can be harmful to a hive during the cold months, and it is just not as pleasant visiting the beeyard during Winter when it is freezing out and the wind is biting, compared to a warm, sunny day in late Summer or early Autumn.

Nucleus colonies can be a great way to expand an operation, provide backup queens, bees and food resources for weak or failing hives, or generate additional income through sales. To manage them successfully, it just takes a little extra thought and attention. Given the many reports of problems beekeepers have been having with purchased queens, raising nucs and allowing them to raise their own queens is an attractive option. Purchased queens can sometimes be really good, and sometime really lousy. Queens raised naturally by a nuc, if they are successfully mated, are almost always really great and go on to lead highly successful colonies.

There are various ways to feed and each option has benefits and drawbacks for you and your bees.

The month of March can be a difficult month for many in the Northeast, especially those of us in the northern-most areas. We can sense that Spring is just around the corner, and yet Winter still has a strong

icy grip on most of the states in this corner of the country. Trees remain bare of leaves, the world around us is mostly brown and grey unless it snows, and at this point most of us have had our fill of snow for the season. The temperatures through much of the region are still too low to enable the bees to get out and fly with any regularity. March is the month that cabin fever can really take hold and cause even the hardiest among us to leave on a trip to warmer climes, where a beach and the sun feel so good, and we can luxuriate in the feeling of being able to go outside without being bundled up from head to toe.

March is also one of the most critical times of the year for visiting beeyards in the northeast to be sure colonies have enough honey. The honey in the hives must last them until the earliest of the blooming plants begin to offer the first nectar and pollen sources of the year in the hopes that the weather will be favorable enough for pollinators to visit and pollinate their flowers. Experienced beekeepers will have undoubtedly learned this lesson the hard way, and beekeeping classes will always cover the need to check food levels in late Winter/early Spring, but there seems to be no end to the new beekeepers who "thought there would be enough honey since nothing was removed last year" and experience hive losses due to starvation at this time of year.

One of the big problems at this time of year is that we humans get just as excited over a warm sunny day as the bees do. Those February or March thaws allow us to get outside, clean up the yard from the fallen branches that have collected during the Winter, perhaps start poking around in the garden, or simply go for a walk and enjoy the balmy weather. If we were on the ball and did everything we were supposed to in Autumn, we have been able to ignore the bees for the last several months and it is easy to continue to forget them now, just when they may be needing us the most.

Depending on your geographical location, all hives should probably have at least two full frames of capped honey located adjacent to the cluster during these late Winter/early Spring days, and the more the better. This is why it is so much better to feed colonies liberally in Autumn making sure that all supers

are full and there are no partially filled frames or undrawn foundation at the start of Winter, so that hives don't need feeding before the spring flowers bloom. Hives that are treated this way tend to be much stronger in Spring than hives that need to be fed during the Winter or early Spring. If the capped frames of honey left in the hive are located on the side of the hive opposite the clustering bees, then the frames of honey should be moved so that they are adjacent to the bees, sandwiching the cluster. If there is little, or no capped honey left in the hive, then the beekeeper misjudged

From my perspective, the best way to feed a colony in need is to slap a full shallow or medium super of capped honey on the hive.

feeding requirements in the Fall and the colony now requires feeding as soon as possible.

From my perspective, the best way to feed a colony in need is to slap a full shallow or medium super of capped honey on top of the hive. Unfortunately, full supers are likely to be in short supply at this time of year, unless you have colonies that died over the Winter and have not had their honey robbed out yet. Sometimes, full frames of capped honey can be taken from several dead colonies in order to fill a super that can be used for feeding a colony in need. The biggest danger in this approach however is that diseases can be spread between colonies this way, so it is extremely important that the dead colonies that are providing the frames of honey for feeding are thoroughly inspected to be sure they did not die from something that may be contagious, such as American foulbrood or nosema. If there is any question as to the reason the hives died, then feeding syrup instead of honey is a safer approach.

The challenge with late Winter/early Spring feeding is that the cold temperatures tend to make it difficult for colonies to access the feed. Research has established that colonies will begin to form a cluster

when ambient temperatures drop down to around 57°F. As outside temperatures drop, the cluster contracts and once temperatures reach around 55°F, the cluster will have formed an outer shell of relatively quiet bees, and a warm inner core where the queen and workers are more active. Much depends on a colonies genetic tolerance to the cold, but generally speaking, when temperatures drop much below 50°F, most colonies are loath to break cluster and do so only under relatively severe circumstances. This is why entrance feeders (sometimes also called Boardman entrance feeders), that position the syrup on the bottom board by the hive entrance are fairly worthless at this time of year. A cluster of bees located up against the inner cover will not break the cluster in order to reach the feeder by the bottom board except on those relatively rare warm days. It is a gamble to feed bees this way with the hope that the colony will process enough of the syrup during warm weather to be able to survive the cold snaps that are still sure to come. A more reliable approach is to use a feeding method that positions the syrup close, if not adjacent to, the cluster.

Hive top feeders that resemble supers in size and shape and are placed under the inner cover on top of the hive, are a bit better than entrance feeders. They will position the syrup closer to the cluster, however the bees will still need to travel a significant distance from the cluster, up the side of the top feeder, over the top of the feeder and down to the syrup reservoir. This also does not work very well in cold weather, though the temperature range at which the bees will be able to reach the top feeder will likely be a few degrees lower than



Blue Sky pail feeder

with the entrance feeder, since some heat rising from the cluster may help to warm the space above. Another drawback to the top hive feeder is that many designs on the market seem to result in at least some bees drowning in the sugar syrup.

The division board feeder takes the place of a frame within the hive body, and is a much better option since it can be positioned adjacent to the cluster making it easier for the bees to gain access to the feed despite the persisting cold temperatures. Small pieces of wood are often placed in the feeder to float in the syrup and provide the bees with a life raft should they fall in. Despite this precaution, inevitably some bees are likely to drown in the syrup anyway. The biggest drawback to using the division board feeder is that the hive must be opened up in order to insert/remove the feeder, check feed levels and refill the feeder with syrup when necessary. This may require you to sacrifice additional time on those rare warm days in order to care for your bees.

Some beekeepers place a plastic zip-lock sandwich bag filled with syrup on the top bars of the hive body containing clustering bees. Wooden shims or a small super, about 1/3 the depth of a shallow super, is added to provide room for the bees and bags.

Feed buckets allow the beekeeper to feed colonies without having to open up the hive when feeding or checking syrup levels in the feeder. This system also places the feeder directly over the cluster of bees where it is relatively easy for the colony to maintain warmth and reach the feed.

A slit is sliced into the top layer of the bag so that bees can access the syrup. The feed bag can be placed directly above the cluster making access relatively easy, though some bees may also drown in the feed and the hive still has to be opened when inserting/removing and checking feed levels in the bag. While the feed baggie is the least expensive option initially, regular use will theoretically eventually add up to a greater cost than the one-time expense of purchasing a more permanent feeder. This is also the only feeding option

that results in the regular generation of landfill waste (the empty plastic baggie with a hole sliced in it).

My preferred method of feeding if I have failed to feed appropriately in Autumn, or do not have full supers of capped honey available, is to use a pail feeder. Pail feeders come in various sizes from about a half-gallon to over a gallon. The lid of the pail often has a hole cut into it that is covered with a fine screen. When a full bucket is filled and the lid placed tightly on so the syrup won't leak out the edges, syrup will begin to run out of the hole through the screening but fairly quickly builds up a vacuum inside the bucket. The vacuum along with the surface tension of the syrup causes the syrup to stop dripping out of the bucket within about 30 seconds or so. The syrup will only drip down if something touches the surface of the liquid such as bees that come up through the inner cover and suck down the syrup once these pails are placed over the hole of the hive's inner cover. Typically an empty deep super or a couple empty shallow or medium supers are placed around the bucket on top of the inner cover and the outer cover is placed on top of the shell created by the empty super(s) in order to protect the feeder from the elements and potential robbers and keep in the warmth of the cluster.

Feed buckets allow the beekeeper to feed colonies without having to open up the hive when feeding or checking syrup levels in the feeder. This system also places the feed directly over the cluster of bees where it is relatively easy for the colony to maintain warmth and reach the feed. There is no danger of bee drowning as long as the lid is on tight and no syrup is allowed to leak out the sides of the lid. One does have to be careful to allow the syrup to stop dripping from the inverted feeder before placing it over the inner cover hole, or syrup



Quart mason jar feeder behind a follower board in a top bar hive.

will drip down on the bees making them wet and vulnerable should the colony be exposed to cold temperatures before they have a chance to clean themselves up and dry off. Mason jars with nail holes punched into their metal lids are often used in place of plastic buckets even though the lids will rust over time and the glass may break if dropped or knocked too hard.

For years beekeepers have been encouraged to feed thin syrup consisting of one part sugar to one part water in the Spring in order to stimulate early brood rearing. Recently research looked at gene activity in response to diet and found significant differences occur depending on what the bees eat. This research suggests that a colony's immune response may be weaker when fed an artificial diet as opposed to naturally collected forage. It appears that in both bees and humans, sugar is not simply sugar and various carbohydrate sources can and do have a different impact in the body.

Given the increased annual die-off of honey bees in the last decade and the widely held suspicion that nutrition plays a key role in honey bee declines, the wisdom of spring feeding of syrup becomes questionable when compared to ensuring that wintering hives are extra heavy with honey instead.

If for some reason I have miscalculated and a colony needs feeding in late Winter/early Spring, I will provide hives with a thick feed syrup made up of about two parts sugar to one part water in order to get as much food into the colony as fast as possible to prevent the possibility

of starvation. But I will only supply feed until the bees are able to get out and successfully gather forage on their own.

While some beekeepers may enjoy taking the time to measure out the sugar and water while mixing up their bee feed, there is a way to mix up 2:1 syrup without having to do any measuring. First fill the bucket or feeder with granulated sugar up to the level where you want the level of syrup to come to once the feeder is full. Then add liquid and mix, dissolving the sugar until the level in the feeder once again comes up the where you want it. It turns out that this process results in syrup that is just about two parts sugar and one part liquid.

If you have colonies that require feeding and it will take longer than you would like before you will have a chance to get a feeder installed in the hive, the emergency feeding of granu-

lated sugar sprinkled around the hole in the inner cover can help. The bees will come up through the inner cover hole and use any moisture they find in the hive to dissolve the sugar crystals. It is a slow process and will not work well in cold weather, but it can sometimes buy the beekeeper some much needed time when necessary.

Fondant (sometimes referred to as sugar candy) can be fed to hives by either placing the fondant on the top bars over the cluster or in a candy board on the hive. Fondant tends to be fairly soft and pliable so it is easy to place in the hive and for the bees to consume as long as it is within their reach. It may even absorb excess moisture in the hive, however like granulated sugar, it is more of an emergency feed since little if any tends to be stored in the combs. It can be preferable to syrup though when temperatures are consistently cold, since the moisture in syrup is

difficult to evaporate in cold weather making liquid feed hard for the bees to process and store properly.

As colonies first emerge from Winter, they are typically in their most vulnerable condition of the year. Adult bee population numbers are low, food stores are low, and brood levels are still being built up. By ensuring that the bees have adequate food reserves to hold them over until fresh forage becomes abundant we help the colony avoid starvation and assist the colony in building up its strength in time to take advantage of the first major nectar flow of the year which, in the northeast, is just around the corner. 

Ross Conrad is author of *Natural Beekeeping, 2nd Edition* Visit dancingbeegardens.com for more information, or call 802-349-4279 to register.



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hive TASKS

~Ann Harman

Second and Third Year

- On a day above 60° with warm sun and low wind inspect hive from top to bottom.
- Help the bees by cleaning off bottom board and area underneath hive.
- Clean up any winter debris from beeyard.
- In bear country, inspect bear and small critter fence; make repairs.
- For good comb select old and damaged comb for replacement during nectar flow.
- If using foundation for replacement, spray with 1:1 sugar syrup with Honey-B-Healthy.
- Depending on weather, monitor food supply—pollen and nectar.
- Feed 1:1 sugar syrup and fresh pollen patties if necessary.
- In small hive beetle (shb) areas, keep inspections to a minimum. Use control methods.
- If colony is weak it can be combined with strong colony.
- Kill the queen in weak colony when combining.



- Call local bee inspector or experienced beekeeper if any disease is suspected.
- Learn the plants and blooming times to prepare for honey harvest.
- Have honey supers ready before nectar flow begins.
- No honey supers on if feeding sugar syrup.
- Learn swarm time in your area.
- Inspect for swarm preparations—drones at entrance, queen cells being made.

- Start your method of swarm prevention.
- Brood chambers can be reversed as soon as bottom one is empty.
- Never split brood area when reversing.
- Reverse every seven to ten days until beginning of strong nectar flow.
- During a strong nectar flow watch the weather—increase or decrease honey supers as needed.



Stacks of supers



DON'T FORGET
Your Next Club Meeting

Ann Harman
keeps bees and does
her bee tasks in
Flint Hill, Virginia



SMALL BUT MIGHTY

THE COMMON STRIPED SKUNK

CALL TO ARMS

On a bright sunny morning you arrive at the apiary ready to inspect your hives. It is bloom season and the nectar flow is going strong. Your last inspection showed good laying patterns and plenty of bees. But today the bees seem agitated and aggressive. The fronts of your newly painted deep hive bodies look as if someone went at them with a garden trowel. Something black and crunchy is stuck to the bottom of your boot. On closer inspection, the black crunchy thing appears to be full of little yellow and brown bee parts.

Unlikely as it might seem at first, here is a dedicated beekeeper's chance to shine. Not only do you have a problem to solve. Better yet, this is one of those great opportunities for you to support and help your honey bees. Odds are, your hives are under siege by one of the smaller but most feared North American mammals, the common striped skunk.

RULE #1: **Know the Enemy**

Weighing in at just 3-11 pounds, the striped skunk is found throughout North America. Living predominantly along woodland edges, this animal favors habitat with a water source and, with claws made for digging, it seeks out places to burrow for shelter. Aside from the Great Horned Owl, a raptor with a poor olfactory sense, this common skunk has few enemies. It may feed on mice, frogs, crayfish, eggs and fruit, but insects make up the biggest part of this critter's diet and honey bees are a favorite flavor.

Skunks are diurnal. This means they sleep during the day and are

most often detected just before dawn and just after dusk. I use the word detected because you know this animal is around by its distinct odor. Skunks do not hibernate but often burrow underground in Winter or when raising young. Live sightings are fairly rare although skunks may be seen in daylight hours in early winter during their mating season. Females raising kits also hunt during the day to stay in the burrow at night and protect the litter from other nocturnal predators. Where I live in Central Kentucky, sightings begin to occur in February after the female has birthed between 5 and 7 kits. Three years ago in early June we mowed hay on several acres surrounding our small apiary. Our hay man stopped by the house on his way out to share his sighting of an adult skunk and five kits leaving the bee yard. No doubt mama was taking her growing babies out to lunch, teaching them exactly where to go and how to get it.

RULE #2: **Identify the Enemy's Strengths and Weaknesses**

If you think you see a skunk, the stark white markings against the predominantly black fur will leave no doubt in your mind. Pick up your dog and run the other way, fast. The skunk most likely will not run or at least not very fast. It might snap its teeth and stomp its feet. This is a warning. If the threat continues, the skunk simply lifts its tail, rocks forward into a handstand and shoots a spray of viscous yellow goo up to 15 feet. If you miss the warning signals, instantly you are enveloped in a cloud of the most vile, wretched odor ever

to hit your nose. It permeates everything including air, lawn, nearby shrubs and trees, outdoor furniture, your skin, the inside of your nasal passages and your clothes and hair. If you, or more likely your dog, is unlucky enough to get hit with the yellow goo, immediately wash it off with a running hose. Start with the eyes. Skunk spray contains a toxin that can cause temporary blindness in other animals and birds.

Studies show that honey bees do have a developed sense of olfactory. We know that this affects hive communication and the identification of good pollen and nectar sources. Whether or not honey bees can smell skunk, I don't know. It would certainly help to explain the ill-temper of a hive under siege by one of these stinkers.

Skunks have thick leathery skin covered by heavy fur. These traits protect the animal against multiple stings it might receive when frequenting your hives in search of dinner. Their eyesight is poor and even though their habits are mostly nocturnal they are not deterred by bright light. Although an unexpected stream of water might startle a skunk into departing your bee yard, skunks don't mind getting wet. Water sources along with beehives are good hunting grounds. Most skunks are not good climbers with the exception of the hog-nosed skunk found in the southwest including west Texas, southern New Mexico and parts of Nevada.

RULE #3: **Study the Enemy's Strategy**

Shortly after dark, the skunk will approach and begin to scratch the

~Barbara Gillette

front of the deep hive body. Guard bees are alerted and send out the danger pheromone. As the bees race out to dispel the intruder the skunk scoops them up by the pawful, sucks out all the juicy parts and spits a wad of the indigestible crunchy stuff out on the ground. When her kits are old enough to learn to hunt the female skunk leads them straight out to your bee yard for a first hand demonstration. If the litter is five babies plus a mother making repeated trips to your hives, the results can get problematic very quickly. Skunks are not particularly territorial and adults sometimes burrow in groups. It's easy to see how the problem can multiply. Just so you know, skunk kits develop their scent glands early in life.



**RULE#4:
Don't Underestimate the Enemy**

When you consider the problems of mites, other predators such as bears, or the unpredictability of the weather, the common striped skunk may seem like the least of your worries. But don't get caught in the trap of complacency. Animals choose their habitats based on food, water, and shelter and your honey bees provide an easy food source. It may not appear to adversely affect your colonies at first. Remember that



strong colonies are your best resource for success, and consistent predation from skunks can weaken your hives, opening the door to wax moth and hive beetles just for starters. It is not unknown for bees to give up and abscond following repeated and ongoing attacks from skunks. Once a skunk makes a burrow in your neighborhood and successfully raises a litter, it will return year after year until you find a way to say good riddance. Easier said than done.

**RULE #5:
Fortify Your Defenses (an ounce of prevention....)**

Here in rural Kentucky, we've been battling these stinkers for eight years. They've raised litter after litter in our next door neighbor's vacated barn. We've offered several solutions. Unfortunately he thinks they are cute and likes to watch them eat from the cat food bowl on his front porch. How to develop good relationships with your neighbors can be a challenge, but this is a different subject, in and of itself.

Skunks can be trapped and cat food is excellent bait. But what to do once the skunk is in the trap? I have heard tales of talking softly and carrying a big tarp to throw over the trap before the skunk sprays. Then you've got to relocate preferably miles and miles away and get the tarp off and the cage spring released on the other end. Hmmmm. Some companies sell specialized traps for skunks. These can be expensive but may be worth the cost if your problem is ongoing.

If you do manage to trap a skunk, it can be extremely difficult to find someone else to take it off your hands. Most companies who deal in animal pest removal tend to not return your call when skunk is part of the discourse. Animal rehabilitators might be another source, but past experience has netted me no more than a referral which led to another referral which ultimately resulted in a dead end.

If the burrow is on your property and you can locate it, fill it in with rocks and concrete. This may encourage the skunk to look elsewhere for a new home. In fact, as the old saying goes, an ounce of prevention is worth of pound of cure. Look for hollow trees, caves, and cracks and crevices in out-buildings that might look attractive to a homeless skunk. Fill them in

**Here are some signs
the common striped
skunk is visiting
your beehives.**



Scratch marks on the front of your deep hive body.

Divots dug in the ground around the hives or in certain areas of your lawn and property.

This is a sign that skunks along with other smaller mammals like fox and raccoon are digging for grubs.

Black clumps and animal scat containing bee parts and/or dead bees in front of your hives. A small number of dead bees is normal for most hives but the presence of bee parts and large numbers of dead bees should always be explored to find the cause.

The odor of skunk in your bee yard. This is a dead giveaway but keep in mind, the skunk may not always spray when under attack from your honeybees, so don't rely on your nose alone.

Behavior changes in your bees tending toward restlessness, agitation and aggression.

Unexplained reduction in the number of bees in the hive or unexplained weakening of the hive.

A stinky dog

now before these nesting spots are discovered.

**RULE #6:
Shield Your Front Line**

One thing you can do is protect your honey bees. An easy and inexpensive way to do this is with chicken wire. Go to your farm supply or home improvement store and buy a roll. The kind with small squares is best but any roll of sturdy wire with fairly small spaces in between the wires will work. Get out your handy wire snips and create wire surrounds for your hives.

The surrounds basically are Open ended cylinders that easily can be lowered down over the top of the hive or lifted off when you are ready to inspect or take honey. The cylinder



should be 2-3 feet tall from ground level but does not need to extend to the top of the complete structure. Striped skunks are not good climbers. With good beekeeping practices and some luck, you will add honey supers to your deeps as the season progresses. Your cage needs to be just tall enough to deter the skunk from attempting to reach over it. Check your measurement ahead of time and be sure to include enough wire to accommodate your hive stand and/or bottom board. Honey bees can fly in and out through the openings with no problems and will quickly acclimate to the new structure. Unable to reach the front of the hive, the skunk will eventually give up and move on.

The only drawback I've encountered using this method is the presence, in late summer, of spiders and bee killers. The wire grid gives spiders a handy structure for web weaving, and makes it easy for them to catch a meal in the sticky trap as the bees come and go from the hive. Here in Kentucky the cages are popular with the large yellow and black *Argiope* garden spiders, a relatively harmless species but one with a wicked appetite. A good whack with a shoe or any other wide flat tool at hand

solves this minor maintenance problem. The wires also provide a strategic perching point for bee killers, a large bodied flying wasp type insect that feeds on bees. They are easy to spot but a little more difficult to dispose because they can fly away. They are not particularly fast, especially if they are in the middle of a meal.

Less complicated than a wire cage perhaps, is constructing a hive stand that holds the main entrance to the hive at least two feet off the ground. Most skunks, even when standing upright on their hind legs can't easily scratch, grab and eat bees.

To make life easier with a hive stand like this make long enough to comfortably hold three hives, and then place only two on it, towards the ends with empty space between to place hive equipment when examining your hive. This really saves the back.

**RULE #7:
What Does Not Work**

This next point is probably unnecessary, but past experience compels me to say that dogs are not good deterrents for skunks. We've had many wonderful dogs over the years;

smart, capable animals, every one of them ending up on the wrong side of a skunk at least once or twice. Cats don't seem to share the same enmity and I'm told it's not uncommon to see a cat and a skunk share the same bowl. In fact, so-called domesticated skunks, the ones with their scent glands removed, will use a litter box and often engage in other cat like behaviors. With dogs it seems to be a feud akin to the Hatfields and McCoys. One of the first signs there is a skunk taking up residence in your neck of the woods is a stinky dog.

**RULE #8:
Employ Best Practices**

Here are a couple of tips that are standard good beekeeping practices, but bear repeating here. Raise your hives off the ground. Beekeepers use everything from pallets to cinder blocks to stands made specifically for the industry. If you are starting out with or branching out into top bar hives, a hive stand should be part of the standard equipment. Some of the solutions above will work for top bar hives although it would be more practical to use your wire for a low fence.

Keep your bee yard clean. When it's 95 degrees out, the bees have had a field day building burr comb on the bottom of your inner cover, and sweat is running into your eyes, it's tempting to wad up the scraped off comb and toss it into the weeds. Carry an old can in your tool kit and scrape the burr comb into it to carry out of the area. Avoid leaving equipment in the bee yard any longer than necessary. If you encounter a dead out, or return empty supers to the apiary for the bees to clean, remove this equipment as soon as possible. Keep the immediate area around each hive mowed and free of weeds and tall grasses. These activities will become good habits with big pay offs in the end. 

PLANT THESE FOR BEEES AND THE HOLIDAYS THIS YEAR

~Kurt Knebusch and Paul Snyder

Here's seven hollies that can take it when Jack Frost nips at their noses. They thrive in bleak midwinters. They look good in the landscape all year. And you can cut stems from at least three of them to decorate your home for the holidays. And bees love them.

how would they look in your garden?



1. Winterberry, *Ilex verticillata*

Picture bare gray stems bearing gleaming red berries. That's winterberry, a deciduous holly that, unlike the evergreen English holly, drops all its leaves before winter.

"This is my favorite species of holly, with the selection Winter Red topping the list, simply for the fact that the stems are absolutely stunning when covered in red berries," Snyder said.

Winterberry is native from Canada south to Florida, west to Missouri,

including in Ohio. It comes in small and large selections that range from two to 10 feet high when fully grown. It prefers damp sites but can tolerate drier ones. Birds such as bluebirds eat its berries. And its cut stems work great as natural, colorful holiday decorations.

"It holds up quite well in arrangements," Snyder said. "And it dries well if left undisturbed in a vase."

Find winterberry in many places in the arboretum's theme gardens.

2. Inkberry, *Ilex glabra*

Inkberry, too, is native to much of eastern and central North America, but especially pine woods and sea coasts. Its evergreen leaves are dark-green, obovate – teardrop-shaped – and lacking in spines. Its berries, meanwhile, give it its name. They're black. But white-berried types exist, too.

In the wild, inkberry grows as a dense, rounded shrub. In the landscape, it's a common foundation

planting. At the holidays, Snyder said, it's used very little for decorating.

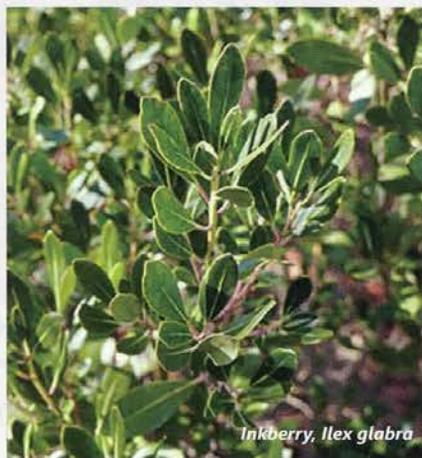
Spot inkberries along the arboretum's John Ford Allee and Million Flower Pathway.



Winterberry, Ilex verticillata

3. Longstalk holly, *Ilex pedunculosa*

Longstalk holly has dark-green, evergreen, spineless leaves and an eventual height of nearly 30 feet. It makes a good specimen plant in the landscape, Snyder said. Best of all are its glossy red berries, which, as its name suggests, are borne on stalks, which are one to two inches in length.



Inkberry, *Ilex glabra*

The berries are “quite attractive and stand out from other *Ilex* species, although the fruit isn’t as heavy as other *Ilex*,” Snyder said. However, he added, “It’s not widely used in holiday decorating except by plant geeks like me.”

Hunt longstalk hollies in the arboretum’s original holly test planting, which is south of Pine Road and Green Drive, and around the John Streeter Garden Amphitheater.



Longstalk holly, *Ilex pedunculosa*

4. American holly, *Ilex opaca*

American holly is native from the Northeast south to Florida and west to Missouri and Texas. It grows in the wild in several counties in southern Ohio, Snyder said. It gets to be a small or medium tree of 40-50 feet high. But in the Buckeye State, a height of 20-30 feet is more likely, he said.

“It’s slow-growing in Ohio and becomes very graceful – a pyramidal habit – with age,” he said. “This plant, in my opinion, is very beautiful and well worth the wait to see a mature specimen in the landscape.

“When you come across a large specimen, there’s almost a respect for the plant. It’s a noble tree in its own right because it took decades to reach such heights.”

The leaves of American holly resemble those of English holly. They’re glossy green with sharp spines. The

plant’s berries are red or yellow. It needs moist, well-drained, acidic soil and, ideally, protection from the winter wind so it doesn’t get burned and lose leaves.

American holly is a common substitute for English holly in holiday decorating.

5. Finetooth holly, *Ilex serrata*

Native to China and Japan, finetooth holly resembles winterberry except for two traits: Its berries are smaller. And it’s semi-evergreen, not deciduous. It doesn’t drop all its leaves in Fall. Some of them hang on through Winter.

“The berries are bright glossy red and hold up well as a cut branch,” Snyder said. “Outdoors, the fruit persist much longer than those of winterberry, making it an excellent addition to the Winter landscape.”

But finetooth holly is “not widely used for holiday decorating simply for the fact that it retains some of its foliage; winterberry is the preferred species,” he said. “I’ve used it for decorating just to see how many species of *Ilex* I can use.”

6. Japanese holly, *Ilex crenata*

Japanese holly is an evergreen type with small, rounded, dark-green leaves and a very dense branching habit. Its berries are black and hard to see because of that branching habit. Its foliage and texture resemble those of boxwood. It can be used like boxwood in wreaths and the like.

“Japanese holly will grow in Ohio, but it’s not widely planted,” Snyder said. “We’ve lost several of them in the arboretum over the past couple of years due to different factors. But the selection Sky Pencil performs well here.”

Look for Japanese hollies in the arboretum’s Jack Miller Discovery Garden.

7. Meserve hybrid hollies, *Ilex x meserveae*

Glossy, beautiful, evergreen foliage in shades of green or bluish-green, plus glossy bright-red berries: That’s what you get with the Meserve hybrid hollies. They’re crosses between *tsuru* holly, or *Ilex rugosa*, and English holly. They’re widely grown in the landscape, almost to the point of overuse, Snyder said.

Meserve hollies will grow in sun or partial shade but prefer the latter. Harsh winters can scorch their

leaves. “A couple of years ago, many of them were defoliated or killed to the ground during winter,” Snyder said.

They shine when used in decorating, he said, noting they’re often preferred over American holly because their leaves are glossier and their spines aren’t as sharp.

Find Meserve hollies, too, in the Jack Miller garden.

Remember, it takes two. Come next Spring, if you want to plant hollies, remember that the entire *Ilex* genus is dioecious.

“That means that male and female flowers are borne on separate plants,” Snyder said. “So in order to get berries, you need a male pollinator.”

But not just any male pollinator. The male and female holly plants must belong to the same species, must be planted somewhat near each other, and must bloom at the same time. Garden center staff and other experts can tell you the right pairings and spacings. 🐝



American holly, *Ilex opaca*

All photos taken in Secret Arboretum, Wooster, Ohio by Mitch Moser, CFAES.



Japanese holly, *Ilex crenata*

WHAT KIND of HONEY is this?

~Jim Thompson



Every flower has its own special honey unique in color, flavor and profile

According to the United States Department of Agriculture, honey has been divided into seven color classes. These classes are: Water White, Extra White, White, Extra Light Amber, Light Amber, Amber, and Dark Amber. According to the United States Department of Agriculture, honey has been divided into seven color classes. These classes are: Water White, Extra White, White, Extra Light Amber, Light Amber, Amber, and Dark Amber.

That may not mean anything, until you are trying to get ready for a honey show and you must decide which class is the proper color class for the honey. Honey can be as clear as a glass of water and vary in color all the way up to being as dark as road tar. The color of honey is determined by the flower that supplied the nectar, the soil conditions, and the weather during the season. Thus a yellow sweet clover plant producing nectar in Ohio will have a different color and slightly different flavor

from a yellow sweet clover plant that is in Colorado, Connecticut, or California or any other state.

To add to the confusion, there are 241 different cultivars or varieties of clover plants. There are various amounts of nectar produced by the specific varieties and some varieties like the Red clover have florets that are normally too long for a honey bee to stick her proboscis in to gather nectar. However on a dry year the flower may not grow as full and the honey bee will be able to get some Red Clover nectar. Honey bees show a preference of going to those flowers that contain nectar with higher sugar content or concentration. This is exemplified by honey bees that prefer robbing honey from weak hives rather than searching out nectar from plants.

If I look up the varieties of dandelion plants, there are two types listed, a single flower and a double flower. However there are other varieties of dandelions mentioned that have white and also pink flowers.



Yellow Sweet Clover

Dandelion



Buckwheat



White Sweet Clover

This indicates that even the botanists are unsure of how many cultivars there are.

I was always told that there were seven varieties of Buckwheat and according to botanists at Cornell there are: Koto, Manisota, Manor, Common, Kevkett, Koban, and Springfield. However the botanists at Michigan University claim that there are: Mancan, Pennquad, Manor, Common, Tempest, Tokyo, and Winsor Royal, which also is a list of seven. Only two of the varieties on both lists have the same name. Other sources reveal five other varieties: Emka, Kora, Hruszowska, Krupinka, and Pyra. So who knows how many varieties there are? Buckwheat is grown for flour, animal feed which has been found inferior to corn, and honey production. Some varieties of buckwheat are not good nectar producers. Buckwheat prefers wet, cold weather and dislikes hot and dry weather. Thus most buckwheat blooms late in the season (September) from approximately 9:30 A.M. to almost noon. Since it is cold for the bees to start flying, they get about an hour each day that the buckwheat is blooming to gather Buckwheat nectar. When a plant stops producing nectar, the honey bees stop going to those plants and start gathering nectar from other sources. Just after a rain storm, you will notice that the bees are not visiting the blossoms because the rain washes the nectar out of the flowers.

During the time that the bees are collecting the nectar from (buckwheat), they bring the nectar back to the hive and share some of it with other foragers and do the proper

dance to let them know where it can be gathered. The rest of the nectar is put in the cells where honey is to be stored. If you would happen to hold a frame that holds buckwheat nectar up to the light, you may see a dark patch of the buckwheat nectar surrounded by the colors of the other different nectars. The general rule is that spring honeys are usually light in color and the fall honeys are usually dark. When one is going to extract the honey, they will usually get a mixture of the honeys that are in that frame. The only way to get a single source honey would be to have the hive in an area where only one floral source is available to the bees or possibly extract frames quite often, immediately after the specific plants have bloomed. This makes sorting of the frames by color before uncapping helpful in getting light colored honey.

You may think that the flavor of the honey will be that of the source that has the highest percentage of honey of the batch, but sometimes that is not true. For instance, just a little bit of Buckwheat honey will not only affect the taste of the honey but make it dark in color too, causing you to believe that the entire batch is buckwheat honey.

How can one identify the source of honey?

1. If you have access to the equipment, you can separate out the pollen grains and identify the plants that supplied the nectar.
2. If there was a wide network of DNA data on the different cultivars and their climates, you could run a DNA test on the honey and compare the results.

3. If you knew the plants that were in bloom when your bees were there, you would have a good idea what the sources were.
4. Finally you could taste the honey and make an educated guess what the honey was from your experience. The taste test is the least accurate and most often used test for identifying honey.

There can be many sugars in honey, but all of the honeys have two primary sugars. These two sugars are Glucose and Fructose. Every flower has a different percentage of these sugars and that same cultivar can have different percentage of sugars because of the various soil conditions. If the two primary sugars are close to each other percentage wise, the honey will tend to granulate quickly. If one of the primary sugars is far apart from the other percentage wise, the honey tends to stay liquid. Thus we notice Canola and Goldenrod honey granulating quickly and Tupelo and California Sage staying liquid for years. When another floral source is mixed in, you notice honey that granulation rates change due to the percentage rates of the two primary sugars.

Honey that has been allowed to sit for a long period of time with a low or acceptable moisture level may separate into layers of different colors, representing the floral sources of that honey. If honey is allowed to sit for a period of over a year, you may notice that the total color of the honey darkens.

When the honey is harvested and extracted without paying attention to the density of the honey, a situation



Classes of Honey, from left to right:
Water White (pictured on page 36), Extra White, White, Extra Light Amber, Light Amber, Amber, and Dark Amber.



WATER WHITE HONEY

can exist where the two sugars in the honey separate in the jar and the Glucose (Dextrose) goes to the bottom and the Fructose (Levulose) rises to the top. The Glucose yields moisture to the Fructose, resulting in a higher moisture level. If this moisture level is above 18.6% and the yeasts and temperature are conducive there is a good chance that the honey may start fermenting. Since bees cap the honey cells when the density is 18%, it is important to harvest frames of fully capped honey. This is on the high end of the moisture spectrum so to have a longer shelf life of the liquid honey the beekeeper should do something to reduce the moisture level of the honey. The honey that is starting to ferment has an extremely sweet taste and to those that are unaccustomed to its taste, it might be mistaken for another form of honey. A later stage of fermentation process will reveal the presence of alcohol.

In order for the hobby beekeeper to remove some of the moisture from the honey, it must be done while the honey is still capped in the comb. A plan to stack the supers up over a light bulb or small heat source and force warm, dry air up through the supers is one way this can be done. Some beekeepers have built special rooms called hot rooms where warm air is circulated through the supers. For the first day, the moisture can be reduced approximately one percent. However the percentage gets less after that and because of the beetle situation, three days is probably all one should try to reduce the moisture.

Some believe that the use of a dehumidifier is the way to remove moisture and forget that honey is hygroscopic and adsorbs just about as much moisture as the dehumidifier is removing from the air. Heating honey to remove moisture is also a poor idea as a good share of the time the honey is over heated and develops a burned or scorched taste and a darker color.

If the honey has a low density level when the two sugars separate, there is a very good chance that the honey will granulate. The ideal temperature for granulation to occur is 57 degrees Fahrenheit. Granulation usually occurs at the bottom of the jar and works its way upward. By heating the honey to 150 degrees and destroying the yeasts and storing the honey at room temperatures will help keep the honey liquid.

The normal method to liquefy honey is to put the jar of honey in a hot water bath and warm it up slowly. If you do this procedure correctly, you will not overheat the honey and ruin the flavor, but be prepared to do it again until the honey is consumed. Some people have used the microwave to liquefy honey but find that it can over heat the honey and cause the plastic containers, if they are being used, to be misshaped.

A few terms or thoughts used in reference to honeys may be incorrect.

Honey is not graded by the color of the honey, thus Water White honey is not the highest grade possible. Grade A honey pertains to the straining or filtering of the honey and not a factor of taste or quality. Pasteurized honey is a process where the honey has been heated to a certain temperature and held there for a period of one half hour. This destroys the yeasts making the honey unable to ferment. It does not necessarily mean that the honey is safer to use for infants. Raw honey means several things to many beekeepers. What they want to say is that honey is neither heated nor filtered but it usually ends up in a questioning match as to what is the highest temperature permitted. My definition of raw honey is honey that is still in the comb. Organic honey is a term used to reflect that no pesticides or chemical fertilizers were used around the hive and there are many unanswered questions. There are no United States standards to define organic honey however a company producing less than \$5,000 of honey might use the USDA/ORGANIC label. The label may invite an inspection by a governmental team and if found to not comply could result in a \$10,000 fine. Some of the items that the team would be looking at would be: the forage area, the hive and foundation, what the beekeeper feeds the bees, how the bees are treated for parasites, how honey is processed, how the honey is labeled, and the records kept by the beekeeper.

Still there is the problem of what to call the honey and be correct. If you are sure of the specific floral source or know the predominate flavor, you could label it that particular flavor or simply label it honey. However many beekeepers are tending to use terms like: wild flower, spring, summer, or fall harvest honey. 🐝

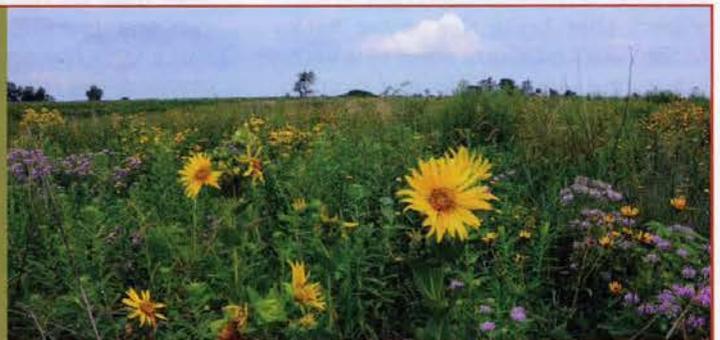
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CITY BEES

~Toni Burnham

Funky City Apiaries Can Make Urban Lifestyle Even Cooler!

Get ready: this column is about to contradict itself. Kindof. Our overall message each month (yawn) is meant to be that bees are a normal and important part of everyday urban living. Anyone who keeps bees for any length of time knows, however, that they change the keeper and they change the place in joyful and miraculous ways, and how can that be anything but cool? And it is cool for both bee and human.

In many ways, excessive hipness could be the downfall of urban beekeeping, especially on those Summer days when newbees have second thoughts while sampling melting drone larva, *not* an iced Americano. But you can approach looking amazing and ahead of the crowd in another way – by becoming a vibrant native part of a city which is totally cool in its essence, and attached to its very identity in place and time. It is looking at your urban home as a center of unlikely and inspiring bee sanctuaries, and making sure that people know they are there.



photo by Michael Thompson

City beekeepers are more likely to need out apiaries anyway: year in, year out, in our downtown short courses the question that mentors get asked most frequently before, after, and on snack breaks is this: “*Can you help me find a place to set up my hives?*” Over the years, we have found many wonderful and unlikely places, but one of the hard-to-hear things I want to say sometimes is “Get out there and discover this wonderful place for yourself!” It is an inspiring and empowering thing to do, and it makes me even that much more grateful to the bees.

That’s because I never knew my city, Washington DC, like I do now – from the tops of rec centers and the South Lawn of the White House, the garage roof of a major cemetery and the back walkway of a monastery. I’ve driven bees through embassy security, brought them up a Smithsonian elevator and wheeled them through the VIP floor of a five-star hotel. You can do this, too, and then all the people who use that hotel, goggle at the back fence of the Executive Mansion, hand out the specially labeled honey at the Annual Fundraiser or the G-20 Summit, or just comment in passing know that bees belong in important places as well as backyards.

Every city is cool – people wouldn’t put up with the expense and hassles if they weren’t. Metropolitan areas are centers of history and culture, museums and communities of faith



and gardens – and stuff I have no clue about. These places have roofs, utility areas, parking structures, and sometimes ground level display areas where people can learn and see bees in action. I can’t share with you in words, how much fun it is to get out there and discover it all, and sometimes be given keys to the back door.

There are bees on the roof of Chicago’s City Hall – and they were there long before I knew Thing One about keeping bees – as well as Buckingham Palace, the Waldorf-Astoria in New York, and NPR Headquarters right here (again) in DC. And the people in these cities know they are there: the local news finds them newsworthy, the tour guides throw in an aside as they shepherd groups down the sidewalk, the co-workers watch for tweets from the beekeepers and announcements of a harvest.

But how easy is it to get from the crowd outside the fence –looking in – to the utility corridor that goes to the roof? Well, it depends.

It’s always easiest to just be invited, and that happens sometimes. The best way to be found is to actually join a local club, or a community with some sort of identity around beekeeping, which sometimes receives requests for bees. My most precious out-apiary came to me this way several years ago, but I am not seeing so much of this now. The ranks of urban beekeepers have grown enough that I think many good places have been approached. By people they already know.

These days, you mostly have to ask sites to consider the inclusion of an apiary, and your success is directly proportional to the length of your acquaintance with that site. Consider





The White House beehive with the Washington Monument in the background

volunteering – a free way in the back door of museums, public gardens, parks and similar sites and building trust that gives you even more access.

Even if you are a familiar face, don't be surprised if the first response is "No!" They may be used to you, but not the idea (yet). And don't give up. We've had bees at the U.S. National Arboretum Washington Youth Garden since 2006, but I asked for the apiary for the first time more than a year before. When they said they weren't up for bees in 2005, I asked them how they felt about beekeeper presentations (which were just fine). After a year of tons of fun with grade schoolers, our proposal for a three hive apiary was accepted and has flourished ever since.

It takes trust, and a sense that you are invested in their special place, too, sometimes. At Historic Congressional Cemetery, I'd participated in fundraising, greening, and celebration planning activities for years before I was a beekeeper, but I did not get my chance until one key (frightened) person left. So I asked again. We now have a teaching apiary with six to 10 beekeepers participating.

Think about communities in which you are involved, and your professional networks. While it's OK to try cold calling the reception or public outreach office of a major site, remember these folks are not in the business of making, but explaining access rules. Instead, I try to find someplace I have worked/volunteered or where a close friend or colleague has ties. I am not afraid to go to LinkedIn, identify the staffer at a site who may be well placed, and poke around until I find that indirect connection. Troll through company press releases to find the person in charge of green-er priorities, and maybe reach out to companies that

provide those LEED consultations. Those companies *adore* beekeeper presentations! And have a coherent proposal in mind, and make it detailed and professional in proportion to how new your contact is.

There are so many corners of your city where people are doing wonderful things and creating beautiful places, and your bees can be there, too. Though this may seem intimidating, I can tell you from experience that it is enlightening, energizing, and empowering. I feel absolutely wonderful about the place where I live now that I know more about it, as well as about the lives of the creatures I look after here. The people who run those sites will be proud of the help they are offering the bees, and their visitors will share greater hope for a greener future. You all need to get to know each other, and give these people a chance to know the bees, and pretty soon your home town will be a better place for all of you.

The White House Bees – Leading From the Nation's Backyard

When Charlie Brandts brought the first colony of White House bees through security in 2009, guards used to handling the safety of the free world blanched. Thousands of student and dignitary visits later, those bees have made friends across the region and the world. Why does this matter to us? If a yard full of helicopters, teenagers, Prime Ministers, Portuguese Water Dogs, manicured landscaping, and an Easter Egg Roll can make room for 60,000 bees, what's your landlord's excuse?

But more seriously, right in DC's suburbs, activists who worked successfully to protect beekeeping in nearby counties in Virginia and Maryland pointed at the brand-new apiary as an example of how bees can fit in almost anywhere. And safely. And with real affection.

The G-20 leaders happily received this downtown DC honey in 2009, and Americans petitioned for the White House Honey Ale recipe in 2012. In the summer of 2014, honey bee health received a policy spotlight when the President's Memorandum on Pollinator Health became a multi-agency priority. It is hard to deny that the colony in his back yard had put a bee in his ear.

Montreal Airport Bees – Hundreds of Thousands of Local Flights Daily

Aéroports de Montréal announced the June, 2014 arrival of five beehives managed by local beekeeping organization Miel Montréal with the headline, "300,000 New Workers at Montréal-Mirabel!" The hives are located on part of the brushy, open ground which is characteristic of many airport facilities, and in fact airports from Chicago to Hamburg have also established apiaries.

In its announcement, the airport authority directly connected the bees with community, culture, and the environment: "Conscious of the importance of preserving these pollinators to safeguard our culture and biodiversity, this project underscores the engagement of Aéroports de Montréal in preserving the environment, sustainable development, and reducing the environmental impact of its activities."

Chicago City Hall Roof Apiary: 12 Years of Females at the Top

The Chicago Honey Coop started out in 2004 as a way to connect young people with economic opportunities through an urban beekeeping program. Founders Michael Thompson



In June, 2014 five beehives managed by local beekeeping organization Miel Montréal arrived at Aéroports de Montréal Montréal-Mirabel! The hives are located on part of the brushy, open ground which is characteristic of many airport facilities, and in fact airports from Chicago to Hamburg have also established apiaries. Miel Montreal photo



photo by Michael Thompson

and Stephanie Arnett were already rooftop beekeepers at the time! The organization is now even more a community partnership that also emphasizes education, food access, and connection to nature in one of the world's great cities: the home of the skyscraper.

CHC has more than 50 hives Chicago, including apiaries on the roof of Chicago's City Hall! Thompson, CHC's Farm Manager, has kept bees in Chicago since 1974.

The presence of nearby plantings matters to all urban beekeepers, of course, but green roofs seems to really deliver big benefits. "Habitat was important on City Hall in 2012 due to a significant drought in May and

June, rare for us. The prairie plants on the green roof were noticeably helpful during this period, especially for pollen. (Potentilla & Penstemon among others)." The 20,300 square-foot green roof was installed in 2001 as part of the Mayor's Urban Heat Island Initiative, a program to address higher temperatures caused by heat trapped in pavement and buildings in dense urban environments. In 2010, the City Hall roof experienced a cumulative 100 degrees F reduction in heat (adding the differences in temperature over time) compared to surrounding areas.

Thompson and beekeeping partner Stephanie Arnett have looked after the hives at City Hall since they were installed in the Spring of 2003. They founded CHC shortly thereafter. The City Hall Apiary is one of the most famous in the country, and the prized honey harvested there is used by the city to promote it's environmental activities and educate the public about urban agriculture in Chicago.

Buckingham Palace Bees: Their Own Urban Island

The Queen of England, like the President of the United States, has an apiary that was installed in 2009 on the grounds of her primary residence. But unlike the bees on the south lawn of 1600 Pennsylvania Avenue, they are not so easy to see. Nonetheless, if you ask about bees in London, this apiary (and probably the one at famous department store Fortnum & Mason) is the most likely to be mentioned.

The Buckingham Palace Apiary is located on an island at this Central London secured compound, and now consists of four hives tended by London beekeeper John Chapple and one of the Royal Gardeners. The island is basically wild, and is not otherwise visited. Like many other hives at high profile locations, the Buckingham Palace bees are there because people are concerned about the decline in pollinators, and are looking at creative ways to promote conservation. See for yourself at www.kcpt.org/highlights/meet-bees-buckingham-palace/

Toni Burnham keeps bees on rooftops in the Washington, DC area where she lives.

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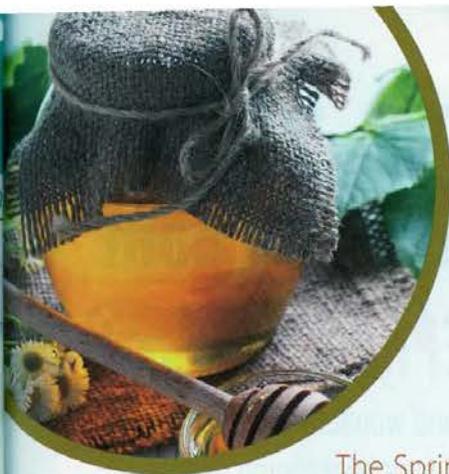
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COOKING

with

Honey

The Spring months are famous for the pick-your-own strawberry patches and for ripe blueberries. Use some of your honey to enhance the flavor of those berries. Both of these berries benefit from honey bee pollination.

~ Ann Harman



STRAWBERRY HONEY PARFAITS

SERVINGS: 4

- 1-1/3 cups low-fat sour cream
- 1/4 cup honey
- 2 teaspoons lime juice or
- 1 teaspoon grated lime peel
- 4 cups strawberries
- 1/4 cup coarsely chopped biscotti or amaretti (Italian crunchy almond cookies)
- 4 mint sprigs (optional)

Mix sour cream, honey and lime juice in a medium bowl until well blended. Reserve 4 strawberries for garnish. Coarsely chop remaining strawberries, about 3-1/2 cups. Gently fold chopped strawberries into cream mixture. Spoon into 4 (10- to 12-ounce) goblets or bowls. Sprinkle with 1 tablespoon cookie crumbs. Garnish with strawberries and mint sprigs, if desired.

Serve immediately or refrigerate up to 6 hours.



BERRY HONEY MILKSHAKE

SERVINGS: 4

- 1 pint nonfat vanilla ice cream or nonfat frozen yogurt
- 2-1/2 cups strawberries, hulled or an assortment of berries
- 1/2 cup nonfat milk
- 1/4 cup honey
- 4 small mint sprigs (optional)

In blender, combine all ingredients except mint. Blend about 30 seconds until smooth and creamy.

Serve immediately in tall, chilled glasses. Garnish with mint sprigs if desired.



HONEY AND SPICE BLUEBERRY SYRUP

MAKES 2-2/3 CUPS

- 1-1/2 cups honey
- 1/2 cup water
- 1/2 teaspoon ground cinnamon
- 1-3/4 cups blueberries (fresh or frozen)
- 1 tablespoon lemon juice
- 1/2 teaspoon vanilla

Combine honey, water and cinnamon in large saucepan. Bring to a boil; reduce heat to low and simmer 10 minutes, stirring occasionally until sauce thickens. Cool to warm. Stir in blueberries, lemon juice and vanilla. Use syrup to top waffles, pancakes or French toast or spoon over granola or yogurt.

BLUEBERRY BUTTER

MAKES 2-2/3 CUPS

- 1/2 cup blueberries (fresh or thawed frozen)
- 1/4 cup honey, divided
- 1/2 cup butter or margarine, softened to room temperature

Bring blueberries and 2 tablespoons honey to boil over medium-high heat, stir constantly. Cook for 3 or 4 minutes or until mixture thickens and is reduced by half. Cool. Blend in remaining honey. Beat in butter.





phil KNOWS



~Phil Craft

A beekeeper in Texas writes:

Q: I recently watched a video on YouTube that advocates using a nine frame bar spacer, as shown below.

It looks like a great idea but I have never known of anybody else using this method. I like the idea because it seems to me like this creates less crowded conditions inside the hive which would make the frames easier to pull out at inspection/harvest time.

I found a nine frame spacing tool for sale at Mann Lake and this tells me that nine frame spacers must be somewhat commonly used. My question is, what do you think may be the advantages and/or disadvantages in using a nine frame spacer?

A: I don't know whether the video you saw advocated using spacers in brood boxes, honey supers, or both. My opinion on the merits of eight or nine frame spacers depends on where you want to put them. However, if you're going to use them at all,

rack in a game of pool – placed to get the positioning right, and then removed. Beekeeping suppliers also sell spacers which are nailed into a ten frame box, permanently dividing it into eight or nine frames. I don't care for that kind in honey supers, because you can't switch between eight, nine, and ten frames without removing the spacer (not easy to do when it's nailed in and propolized over.) In brood boxes they're even worse, because they make it impossible to slide frames over when working hives. When I do inspections, I first remove an end frame and set it aside (on the ground leaning against the hive, or in an empty brood box.) I then scoot the next frame over before pulling it out. That gives me a bigger space to work in, making it easier to remove the frame and less likely that I'll "roll the bees" (squash them between two frames) or even the queen. With mounted spacers, the frame must be lifted directly up. The permanent, nail-in, spacers are also more expensive because they require two per box, whereas one push-in type can be used in any number of hives.

In my July 2013 column, I discussed the advantages of using eight or nine frames in 10-frame honey supers. (*Bee Culture* readers who are interested and don't keep issues that far back can email or write me for a copy.) In brief, I much prefer fewer than ten frames in supers. I think, though I'm not certain, that a super with eight or nine frames may actually hold more honey than one with ten. I know that fewer frames cost

less, take less time to put together, and are quicker to extract. They also encourage the bees to draw comb out beyond the edges of the frame, which makes decapping faster and easier. When using foundation only, I start with 10 frames per super and trust myself to space them by eye. As the bees draw out the comb, or when I start with a mixture of foundation and drawn comb, I use nine frames, and eventually change to eight. To distribute them evenly in the super, I use push-in spacers with the appropriate number of divisions. I find that the fewer the frames, the more difficult it is to gauge the spacing visually.

Some beekeepers also prefer to use nine frames in ten frame brood boxes in order, as you said, to make the box less crowded and make frames easier to remove and replace. I would never suggest using eight frames in a brood box. Bees treat brood comb a little differently than comb for storing excess honey. Given extra room in a honey super, they will just draw the cells out slightly deeper, which is why they are easier to decap. However, in brood boxes with fewer than nine frames, they will connect frames together with extra wax (bur comb) or even make a complete extra layer of comb between them (bridge comb), generally just making a mess of the brood box. A similar result can occur with nine frames in a standard brood box if the frames are not evenly distributed. That's where the spacer comes in.



Nine frame bar spacer

I recommend the type in your picture, which I call push-in spacers. Whether metal or plastic, with or without a handle, they are used just like the





Deformed wing virus.

Early in my beekeeping career, several people recommended to me that I use nine frames instead of ten, and I tried it for a couple of years. It did make getting into my hives easier, as long as I kept the frames correctly spaced. I returned to using ten frames when I realized that I was reducing the area available for brood rearing by 12.5%. Why 12.5% instead of 10%? Bees typically do not rear brood on the outside frames because it is harder for them to maintain ideal temperatures for the brood there. They tend to use those frames for food storage. So, instead of sacrificing one frame out of ten for brood when I changed to nine frames, I was really giving up one out of eight. I switched back to ten frames mostly because I wanted to maximize honey production, and to do so I needed my hives to be as strong as possible. To build the colony's population, I needed all the brood frames that the hive was designed to hold. That was not the only reason I went back to 10 frames. I found that, despite using a frame spacer, I sometimes got in a hurry and left a little more room between some frames than others. The result was that the combs varied slightly in thickness. I make nucs in five-frame nuc boxes. When I put one of these slightly thicker brood combs into a nuc box, I had difficulty fitting all five frames in, which I found frustrating. After resuming using ten frames in the brood boxes, I found that I could very easily space them evenly by eye and that, as long as I went through my hives every couple of weeks in the spring and summer, I had little difficulty removing frames or putting them back in.

Your question is a good example of different strokes for different beekeepers. I like eight frames in honey supers, but my son prefers nine, so I may have to change - not because he's right and I'm wrong, but because he now does most of my extract-

ing for me. I went back to ten frame brood boxes, but there is nothing wrong with using nine. You might decide that giving up some brood area is a good tradeoff for the extra room and convenience. You'll never know until you try, and a frame spacer is a small investment to make. I recall hearing Dr. Tom Webster, apiculture extension specialist and researcher at Kentucky State University, say that we each need to learn what works for us, and develop our own beekeeping style. I think that is very true.

A beekeeper in California writes:

Q: *Is there a race of bees with all yellow abdomens? All the ones I have seen suffer from deformed wing virus. I have ordered MAQS [Mite Away Quick Strip] to control the Varroa.*

A: The yellowest bees are Italians. I've read that the color is even more pronounced on Italians in the United States than on those in Italy because Americans tend to prefer more saffron colored bees, and queen breeders have selected for that trait. There is even a line of almost pure yellow Italians called Cordovans, which was first developed as genetic markers for research purposes. These very yellow Italians are sold by some queen producers, including at least one in California. I have long thought about buying one for my observation hive.

Within a hive, coloration can vary because of different genetics. Though all the bees in a given colony may have the same mother, they carry genes from several fathers. Queens generally mate with more than a doz-

en drones. (The number of matings cited differs from one article or book to another, and all are estimates or averages.) The sperm stored in the queen's spermatheca after these couplings can be sufficient for her to fertilize eggs for up to several years, creating a genetic diversity among the half-sisters in the hive which is beneficial to the colony as a whole. It reduces susceptibility to disease, and increases resilience because the offspring from one drone may be resistant to a particular disease, whereas another group may possess other traits which give them, and the colony, a survival advantage. We can think of this diversity as being similar to the contributions to a community of a group of citizens possessing distinct, specialized skills. Color is an incidental trait which accompanies more substantive differences.

However, your saying that all the bees with yellow abdomens suffer from deformed wing virus (DWV), makes me suspect that what you are seeing has nothing to do with genetics. I think that they are very young bees (a few days old at most) whose coloration is different from that of the adults because their exoskeletons have not yet hardened. My own bees being of a darker stock, they look grey to me when newly emerged. The virus which deformed your bees' wings affects the developing pupa prior to emergence. Its victims never live long; the adults will sense that they are defective and remove them from the hive. Thus all your deformed wing bees are young, and all your young bees have yellow abdomens.

You are quite correct in associating the DWV symptoms you are seeing with a Varroa issue. Varroa mites carry DWV along with at least two dozen other viruses. This number keeps going up the longer researchers study Varroa. While some viruses are not accompanied by any observable signs, they can still have serious consequences for the well-being of the colony as well as for the health of individual honey bees. Deformed wing virus is one which can produce clear characteristics - the deformed wings from which the name derives - but they may only appear on some of the infected bees. The asymptomatic ones still suffer less visible damage from the virus, including lower body weight and shortened life span, which can lead to high winter colony losses.

The same California beekeeper responds to Phil's emailed reply:

Thank you for the detailed response and I agree with your assessment. By way of background information the queen is an open mated Carny from a central CA beekeeper and breeder. The few drones I have seen are dark and the workers are typically colored Italians. The bees are very calm when inspecting the hive but use a lot of propolis.

I knew the colony was in trouble when in early December I began seeing a lot of dead bees near the hive. The sticky board showed a very heavy mite load. Then the blond bees with deformed wings appeared so I ordered MAQS and treated with two pads a few days after contacting you. The

colony now appears to be doing well with the bees foraging on fiddleneck and mustard. We have mild winters in the Central Valley and the bees forage even in winter in this urban environment. I have not opened the hive since treating but with all the recent activity I'm sure the colony is growing and have even seen bees orienting.

The colony was installed in early April 2014 and filled four medium eight-frame supers with honey. We harvested three and left one on for Winter. The honey is dark with a distinct but mild flavor.

The "blond" bees intrigued me since I had not seen anything in the literature about all yellow bees. I agree, they were recently emerged

bees, somewhat small in size and loaded with viruses.

Thanks for the information and I greatly enjoy your column. Phil replies again:

I'm glad that you treated to control the Varroa. The consensus among experts is that controlling mites is the most important action beekeepers can take to improve the health of their colonies. Unfortunately, much of the damage they do is by stealth, like the viruses for which they are vectors, and it is often attributed to other causes. 🐝

Send your questions to Phil at:
phil@philcraftthivecraft.com
www.philcraftthivecraft.com

CATCH THE BUZZ

Providing An Additional Source Of Minerals Might Be Just The Thing For Honey Bees

Despite having few taste genes, honey bees are fine-tuned to know what minerals the colony may lack and proactively seek out nutrients in conjunction with the season when their floral diet varies.

This key finding from a new study led by Tufts University scientists sheds light on limited research on the micronutrient requirements of honey bees, and provides potentially useful insight in support of increased health of the bee population, which has declined rapidly in recent years for a variety of complex reasons.

The research, published in *Ecological Entomology*, suggests that beekeepers should provide opportunities for their bees to access specific nutrients, possibly through a natural mineral lick,

to support their balanced health because the bees will search for the minerals when they need them. It is also an opportunity for the general public to support the bee population by planting a diverse range of flowers that bloom throughout the year.

"Currently, there are micronutrient supplements for managed bee hives on the market but there is little research backing up which minerals the bees actually need," said Rachael Bonoan, the lead study author and a Ph.D. candidate in biology in the School of Arts and Sciences at Tufts. "The fact that honey bees switch their mineral preferences based on what is available in their floral diet is really exciting. This means that somehow, honey bees know which nutrients the colony needs. This insight helps us support honey bees and other pollinators by providing access to diverse nutrient sources all year long."

The findings show that honey bees forage for essential minerals that aid their physiological health, even though they have relatively few taste genes. In the fall, when floral resources dwindle, the study showed that bees seek out specific nutrients—calcium, magnesium, and potassium, all commonly found in pollen—by foraging in compound-rich or "dirty" water. When flowers and pollen are abundant in the Summer, the bees prefer deionized water and sodium, ultimately suggesting that bees are foraging for minerals in water based on what is lacking in their floral diet.

Bonoan and her research team studied eight honey bee hives that were located about 100 yards from the research area. The bees were trained to come to the research site because researchers placed jars of sugar water at staged intervals until the worker bees became accustomed to the ready food supply.

Researchers set up water vials with different minerals such as sodium, magnesium or phosphorus and catalogued the number of bees that visited each vial. At the end of the day, they also measured how much the bees drank from each vessel to determine which minerals were most in demand.

The researchers also tracked the hive each bee belonged to by dusting worker bees with different colored powders as they left the hives. The team noted which colored bees were drinking from which mineral-laden water source, and later measured the amount of brood to determine whether there is a connection between bee health and specific minerals.

The study results related to hive health were inconclusive. While stronger colonies do tend to visit more minerals than weaker colonies, it was difficult to determine which came first, being a stronger colony or accessing mineral resources. Additional data is necessary to assess colony fitness.



CERTIFIED NATURALLY grown

MUCH MORE THAN A MARKETING LABEL

~Alice Varon

How can you have organic honey? That's not an uncommon question when I talk with beekeepers. They will correctly point out it's impossible to control where honey bees fly. Since honey bees can cover a geographic range of more than 8,000 acres, the odds are decent they will forage on a crop or landscaped area that has been treated with synthetic pesticides. This fact makes it impossible for most beekeepers to qualify for organic certification. Yet many beekeepers are committed to organic principles, and would like a certification that recognizes their practices.

Fortunately, there is such a program, called Certified Naturally Grown (CNG). Participation in the organization's apiary certification program has grown each year since it was launched. The experience of Leigh Knott is typical. Back in 2010, when she was living in northwest Arkansas Ms. Knott started keeping bees. From the beginning she had a firm commitment to working with nature, not synthetic chemicals, to manage her apiary. It was a steep learning curve, but she was glad to discover some guidance when in 2013, after she relocated to the Blue Ridge Mountains of NC, a local farmer told her about Certified Naturally Grown's apiary program. As she expanded her apiary in her new home, she relied on CNG's apiary standards as guidelines to best practices. In 2015 she initiated and completed the CNG apiary certification process and is able to use the Certified Naturally Grown name and logo to market her honey.

Since 2002, Certified Naturally Grown has offered certification for farmers using natural methods to produce food for their local commu-

nities. CNG's peer-review certification programs are tailored for direct-market farmers, and based on a commitment to working in harmony with nature, without relying on synthetic chemicals to manage pests, soil fertility or plant diseases. Today there are more than 700 CNG farmers and beekeepers in 48 states nationwide.

In 2007, CNG started receiving phone calls from beekeepers concerned about colony collapse disor-

der, asking whether we'd offer certification to their apiaries. They were committed to supporting the health of their bees, and felt that keeping synthetic chemical treatments out of their hives was an important part of that work. Being able to be certified for these practices would provide a way to encourage other beekeepers down this path, and raise awareness among customers.

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After all, they reasoned, while we can't entirely prevent our bees from landing on crops treated with

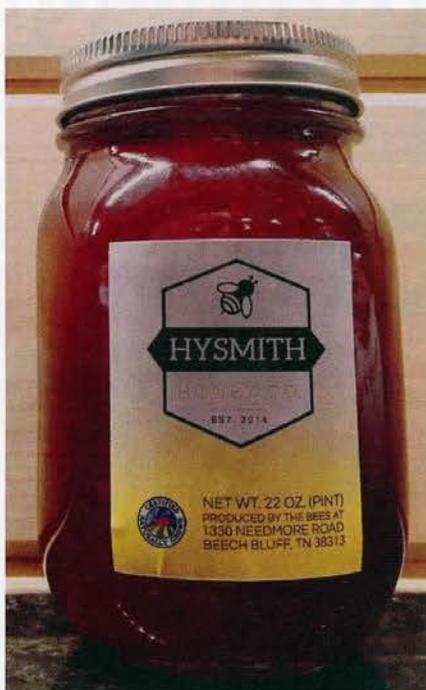
harmful pesticides, we can surely support honey bee health in other ways. Beekeepers can keep chemical treatments out of our hives, follow good management practices, and allow for natural selection to determine the strains that will best withstand pest and disease pressures, and thrive in our local conditions.

We were sold on the idea, but we needed an experienced beekeeper to work with us to develop the certification standards that would form the basis for such a program. What particular practices would be allowed, prohibited, recommended and required to be a CNG beekeeper?

As luck would have it, Dr. Buddy Marterre of Winston-Salem, NC contacted us and said he was willing to take the lead in drafting these standards. We worked with him to ensure the apiary standards were in keeping with CNG's approach, including regulating only what's meaningfully in the beekeeper's control, minimizing paperwork, and working with nature instead of relying on inputs. We shared the draft standards with experienced beekeepers nationwide to get their feedback, made some adjustments, and then developed the application forms and inspection worksheets. All these program elements have been posted to the CNG website. We launched CNG's new Apiary certification program in 2010.

As of December 2015, CNG had received more than 320 applications for apiary certification. These applications were reviewed based on CNG's Apiary certification standards. Today there are more than 80 Certified Naturally Grown apiaries in the United States. They're distributed across 29 states, with the greatest numbers in Georgia, North Carolina





Hysmith Jar Photo by Austin Varner.

and Virginia, Pennsylvania and Tennessee (four in both). Like all CNG producers, they each have a profile on the CNG website at CNGfarming.org. Once applicants complete the certification process they're also eligible to purchase marketing materials such as the CNG logo stickers to place on jars, or laminated certificates or signs. We are currently designing a honey jar label just for Certified Naturally Grown beekeepers.

One may wonder whether there's really a need for a certification program providing a marketing label for beekeepers committed to ecological practices. After all, these are typically small-scale producers with a devoted local customer base, and they rarely have any difficulty selling all their honey. But as it turns out, marketing isn't the only reason, or even the main reason, why beekeepers join Certified Naturally Grown and maintain their certification.

We recently conducted a survey of our current members to get a better

sense of what motivates them. The survey gave four reasons why a beekeeper might choose to be CNG certified, and asked how important was each. The results are shown in the table below. By far, the most significant reason was "to highlight my practices and values", with 79% of respondents saying it was super important. This reason was followed closely by "to raise public awareness of honey bees" with 59% of respondents saying it was super important. The survey also asked members for examples of how their certification had been valuable. The results confirm that for CNG beekeepers, certification is about more than marketing – they also see it as a way to raise awareness and educate their customers.

Rhett Renoud of Wild Honey Ranch in Ramah, NM describes his reason for maintaining his certification this way: "With the certification, people are drawn to respect the world of beekeeping and understanding how fragile our environment is. And more importantly, the CNG certification helps people understand that there is more than one way to keep bees."

In her application, Leigh Knott of North Carolina indicated her reasons for seeking CNG certification. She wrote "I want to raise awareness of naturally grown honey vs. conventional. I believe becoming CNG certified would be a great way to raise awareness and hopefully encourage other local beekeepers to follow CNG guidelines."

One of the distinctive features of CNG is the peer-review inspection component. These inspections are a core component of the certification process, and are carried out at least once per year by another beekeeper in the area.

Related to this requirement, Rhett Renoud adds another reason for keeping his certification: "Because Certified Naturally Grown is

structured and has an accountability system, it separates myself from the other local beekeepers. In a sense, the certification demands respect." This sentiment is shared by Ryan Hysmith of Hysmith Honey Co. in Beech Bluff, TN. He writes "It is one thing for me to tell people I cared about creating a clean, natural product; it is another thing to show third-party verification".

Leah Knott, like many CNG producers, found the inspection experience itself was valuable. She writes, "The inspection process was great. We spent a lot of time on each question (since it was my first one) and it gave me the chance to really review my habits vs. best practice. The inspector clearly had some ah-ha moments too."

In some areas, CNG certification can grant access to certain markets. Don Studinski of Honeybee Keep in Golden, Colorado, told us that "The market manager was 'interested' in my honey before we discussed CNG, but he was 'excited' to have my honey when he heard about my certification." In fact, there are several farmers markets and grocery stores that give preference to producers who are Certified Naturally Grown (they're listed at cngfarming.org/markets_directory).

Most CNG beekeepers are working on a fairly small scale. A recent survey found that of all 28 respondents, only three had more than 50 hives this year, 10 had 26-50 and 15 had 25 or fewer. Most CNG beekeepers are hobbyists, and in a handful of instances they're sideliners. Even though there's a minimum dues of \$110 for CNG farmers, we do not require a minimum amount to cover the certification dues for beekeepers. All CNG beekeepers must contribute *some amount* to keep our grassroots program running, but our goal is to encourage participation and help us raise awareness of the importance of natural beekeeping, both for the sake of the bees and our food supply. By not setting a minimum, we avoid excluding people on financial grounds. Please join us!

You can learn more, get certified, and register for updates at: CNGfarming.org/apiary 🐝

Alice Varon is Executive Director of Certified Naturally Grown.

Reason	Weighted Average*
To highlight my practices & values	3.71
To raise public awareness about honey bees	3.26
To help my marketing	2.82
To connect me to other beekeepers	1.81
*on a scale of 0–5 where 0=insignificant, 1=it matters a little bit, 2=sure that matters, 3=pretty important and 4=super important	

it's Hive Inspection DAY

WITH MY MENTOR!

~Ann Harman

My mentor is coming at 2 PM today. We could not examine the colonies yesterday because it was cool and rainy. But today it's bright sun, about 75°F and almost no wind. My two colonies are a bit different. One was started from a 5-frame nuc that was put into a 10-frame medium brood chamber. The other one was started from a package put in a 10-frame medium because I got my order for nucs in to my local club too late. Only one nuc was left. Both colonies do have Italian queens. The last inspection we did was two weeks ago. Both hives have syrup feeders on so that good comb can be drawn. My mentor is always on time so I will have my well-packed smoker lit and ready to use.

My mentor has arrived! So my first question is What are we going to do today? Uh oh. My task was to review my records of the last inspection. If I had done that I would know what to look for today. So we are off to a slow start while I read those records. My mentor especially emphasized reviewing those because the two colonies got off to quite a different start. The one started from a package did not have any comb so the bees had to draw comb before the

queen could start laying eggs. That is why the package colony is behind the nuc colony in numbers of bees.

The nuc colony had a good population of bees of all ages. This colony also had to draw comb on the other five frames but with its larger population it had a head start. Perhaps there will be enough drawn comb to add another medium brood chamber. I hope there is at least 90% drawn today. Perhaps this colony can expand enough into a total of three medium brood chambers and possibly make some surplus honey this year. I understand the package colony may have to be fed 1:1 sugar syrup for a much longer time than the nuc colony to achieve a sufficient number of bees for wintertime.

We finished reviewing the records from last time and the smoker is still puffing plenty of smoke. Are we going to watch at the entrance before opening the hives? We did that last time and I know my mentor has suggested watching activities at the entrance not only before opening a hive but also at other times. Both colonies are certainly very active with bees bumping into each other while going in and out. Lots of pollen is coming in

but I see one color is different than the last time I watched. I now know that means a new source of forage has blossoms. As I look at the flight paths in the air most of the bees are headed in the same direction. Only a small number have chosen a different flight path this time.

The package colony definitely has more forag-

ers now than at the last inspection. And it is possible there are more guard bees inside the entrance. It is a bit hard to tell because of all the flight activity. The last time we inspected was in mid-morning. Now I can see—and hear!—a few drones

My mentor has guided me into waiting a minute before removing the covers. This time gives the bees an opportunity to fill up on honey and become calm

returning to the hives. They have a definitely different buzz. I wonder if they are returning from a Drone Congregating Area, a DCA, searching for a virgin queen.

It's time to open the hives. I think it would be a good idea to open the nuc colony first. Some puffs of smoke at the entrance and a bit under the outer cover. My mentor has guided me into waiting a minute before removing the covers. This time gives the bees an opportunity to fill up on honey and become calm. Covers off. WOW! I've never seen so many bees before in my life! More smoke! Lots of smoke! Am I giving these bees too much smoke? My mentor is telling me to stop smoking the bees. In fact they do seem to be a bit confused. Now what? My mentor said that I





A Drone

acted too quickly. I needed to wait to see if the bees were staying in the hive or if lots of them were coming out of the hive. I just need to observe their behavior before taking action. A very few colonies become overly defensive. These Italian stock bees are generally calm and respond to a sensible amount of smoke. However if my bees were African bees then lots of smoke may be essential.

As the colonies grow I am going to do either a sugar shake or alcohol shake to monitor Varroa

Now that these bees have calmed down I can remove some frames to see how well they have drawn comb and if they are ready for another medium brood chamber. I can look at a frame of brood to examine the pattern and to look at pollen and honey stores. The brood pattern shows me that the queen is performing very well. (The number of bees in the hive actually told me about the queen's efforts if I had just not panicked when I saw so many.) I did bring the

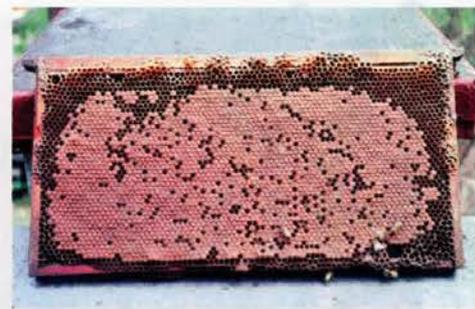
next brood chamber with me to the beeyard. Yes, my mentor told me to think about what you need to bring to the apiary to avoid running back and forth from the storage area to the hives. The hive should be open no more time than necessary. Since the weather is ideal and the forage seems plentiful, the colony is ready for the second brood chamber.

I am so pleased with the progress of the nuc hive that I think I will order a queen excluder and another medium with 10 frames just in case I can harvest some honey this year. My mentor has cautioned me to learn the plants in my area that can produce surplus honey and their blooming time. Well, if I miss this year, I'll be ready next year.

The nuc hive is now closed. Next I will open up the package colony. This time I will be sensible about smoke. The bees are calm and have a quiet buzz, quite different from the sound of the nuc colony during the heavy smoking. Is this the sound a normal, undisturbed colony makes? My mentor assures me that it is. I will remember this quiet buzz and also the loud, complaining buzz during the over-smoking of the nuc colony. My mentor reminded me to listen to the bees' sounds. Then I will be able to tell if I have really disturbed them during inspection and if they return to being quiet and calm. I hope that I can learn the sound a queenless colony makes. That particular sound alerts the beekeeper when opening a hive that the colony has lost its

queen. The sound is not done to tell the beekeeper—the beekeeper just notices it's a characteristic of queenless colonies. My mentor promised to let me know when he finds one so that I can learn more of the different sounds a colony can make.

The package colony has made good progress in the two weeks since the last inspection. The weather has been good for foraging. Since the comb is 90% drawn, the second medium brood chamber can be put



on. The feeder will be refilled with 1:1 sugar syrup. The queen is busy laying eggs. No problems can be seen.

Since these two colonies are so new and have plenty of space in the hive as well as young queens, swarming would not be expected. However my mentor did point out where to look for both swarm cells and supersedure cells. That is something to keep in mind, especially for next year.

As the colonies grow I am going to do either a sugar shake or alcohol shake to monitor Varroa. My mentor offered to help with my first one. I've never scooped up bees into a jar before. It's supposed to be quite easy but I also need help to make certain I can identify the Varroa shaken loose. The small hive beetle (shb) could also be a problem. I thought I saw one on the inner cover but it turned out to be a harmless beetle much larger than a small hive beetle. However I will have to watch for the real shb.

So far I have recorded the observations made today. I am learning how important records are. It really does not matter how you keep them but you do need to review what you did and what you found at the previous inspection. Today some beekeepers write them in a notebook; others text or phone them to a computer. One problem with electronic equipment in the beeyard is that gloves or fingers can get quite sticky with wax and propolis. These are not easily removed. It is best to try several ways of keeping records to find one that you will continue using. Keep it simple, easy to use. If keeping records is made too time-consuming that project will be abandoned, especially if you increase your number of hives.

My mentor seemed a bit surprised when I mentioned ordering a queen excluder and another medium as a honey super for the nuc colony this year. Is this an appropriate time of year to get surplus honey? My mentor reminded me that the United States is a big country. True. Some



live in the cold northern states, many live in a large temperate area. Then there is the South, warm and even subtropical in places. Deserts, mountains, prairies. I have to understand my climate and also my weather. Those control both bee activities and types of plants. I used the USDA Plant Hardiness Zone Map to determine the growing temperatures in my area.

lawn with the same contaminants as in rural areas. Urban beekeepers worry about having enough plants for forage during the beekeeping season. I think I'll take a drive around the roads during beekeeping season to see what my bees will find for pollen and nectar and the possibility of contaminants.

Open the website and put in your Zip Code.

I also found out that honey crops depend on the type of area—whether rural, suburban or urban. Rural beekeepers are concerned about farmers and the use of pesticides, herbicides and fungicides on crops. Forage could be contaminated. Suburban beekeepers have to cope with too much green

Next I was reminded that I had to be a Weather Watcher. If I put on a honey super in the middle of a drought I might get very little honey. The bees need it for themselves first. Drought reduces nectar production. Lack of sufficient rain also means the plants and their flowers are smaller than if rainfall were normal.

Just the opposite of drought is the overabundance of rain. Endless days of rain keep my bees inside the hive. They will have to eat all available stored honey to stay alive and to raise bees. The queen could be laying fewer eggs but the adult population may be quite large and does need to eat. Wind is another weather factor. Bees really cannot fly with wind about 12 to 15 miles per hour or more. An approaching thunderstorm will send them back to their hive, cutting short their foraging day.

I now realize that bees are dependant on their environment and on my beekeeping skills. My mentor will help me develop those skills. 

Ann Harman mentors beekeepers from her home in Flint Hill, VA.

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SOCIAL MEDIA

YOU CAN'T IGNORE IT, AND YOU REALLY DON'T WANT TO

~Jessica Dally

Several years ago I wrote up various articles in *Bee Culture Magazine* for beekeepers, clubs and the like about social media. It covered why you might use social media to sell your products, your club and how to go about setting up your social media profiles on various different social media platforms.

Times have changed and really it's no longer an option to not use social media - or it shouldn't be. Not only is social media the place to connect with fans, buyers, and supporters, but it's literally the cheapest paid advertising you'll ever find. Or it can be when you do it right.

Way back in 2012 we covered how to set up your personal Facebook profile. It's worth noting that you don't have to personally use Facebook to use Facebook as a business. Indeed a friend uses Facebook to manage her VERY famous band's Facebook page but doesn't have a single friend on Facebook and does nothing there personally. You don't have to like using Facebook personally to use it as a business. But ignoring it as a business or as a club would be foolish.

Then in 2013 we covered how to get a Facebook page started for your small business. It may be that you've started doing things on Facebook but your page hasn't grown as much as you'd like. Stay tuned as we cover some best practices you can do to grow a bigger following. More importantly we'll discuss how very

tiny amounts of advertising can also help grow a larger fan base.

And by fans we mean buyers. Because really, that is what this is all about isn't it? Members of your club, buyers of your product, attendees to your event. Whatever it is, the number of people who like your page isn't really what's important. What matters is how that translates into real life action. And it can and will when you do social media correctly!

We've also discussed Twitter and how to use it. It's renewed

attention makes it a great place for those who want to follow you as you move about from farmers market to farmers market. And believe it or not, there are many people who don't have a Facebook page but do have a twitter account. Depending on the gender, age, and other demographic characteristics, some people simply like one social platform over another. Twitter is alive and well. In upcoming issues we'll talk about how to know if you should be there or not.

We've also discussed Blogging, both where to blog and how. Things have changed on the blogging front and now many are publishing on other blogging platforms other than their own. In upcoming issues we'll discuss knowing if you want to move over to other platforms or if this is necessary for you. It may be that blogging isn't even for you anymore. Is it still necessary?

The social media world moves fast, but let's face it, social media isn't your primary business. So how do you manage this marketing side of your business without letting it take over the time you need to actually RUN your real business?

And MOST importantly, how do you insure that the things you're doing pay off for you? There's not any point at all to working hard at marketing if it's not bringing people in the door, selling product, connecting you with clients and fans or insuring people know what you sell and that they'll buy from you when the time comes.





Many social media educational sites will talk about things like Click-Through-Rate (CTR) and how to insure people are clicking on ads to get to your website. But that kind of thing doesn't matter if it's not actually selling product. CTR doesn't pay your mortgage.

With that in mind when we talk about Facebook advertising we're going to discuss how to keep costs low (no, I mean REALLY low - about \$10 for an ad), how to reach new customers, and how to get actual BUYERS.

We'll also be talking about tools you can use to make your marketing look better because, let's face it, most of us aren't graphic designers and don't have the money to pay big bucks for someone to design every single thing we post to social media. And let's be clear, there are some really great tools out there to make your posted content look great that don't require you to spend much (if

anything) and don't require you to be a graphics pro at all.

We'll talk about what has changed since folks first started advertising on Facebook and why that's important to you. Most importantly we'll talk about how it changes what you do there and on other social media platforms. You can't just post whatever you like there anymore and have all of your fans see it. While that sounds like a bad thing, I'll be explaining why it's actually a great thing for you, your fans, and your business in general.

Finally, we're also going to talk about those dreaded reviews that come with any brick and mortar business and how to deal with any review site. You don't have to be afraid, but you also can't ignore it. While "build it and they will come" doesn't usually work in business, "ignore it and it will go away" also doesn't work. But fixing problems isn't as hard as you might think.

None of this is as difficult as you might think, and none of it needs

to take as much time as you might think. But if business isn't quite what you'd like it to be, if your club doesn't have the turn out you'd like, or you simply need to get more people to know about what you're doing, ignoring social media is going to be essential to you.

While for many the learning curve may be tricky, the great news is it's a FRACTION of the cost associated with what you used to spend on traditional advertising. And it works! 🐝

Jessica Dally is the Director of Marketing for a company in Washington State and also runs her own marketing consulting business, Jessica Dally Consulting which can be found at www.JessicaDally.com or on Facebook at www.facebook.com/jessicadallyconsulting. She has worked with numerous beekeeping businesses including Bee Culture Magazine and was a former board member of Puget Sound Beekeepers in Seattle, WA.

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Making INCREASE

~Patrick Dwyer

A COMPARISON OF DIFFERENT METHODS OF OBTAINING HONEY BEES

Making increase is a fundamental activity of beekeeping whether one is a beginner beekeeper who purchases her first bees, a more experienced beekeeper who wants to replace lost colonies, or an established commercial beekeeper who proactively expands the number of colonies. There are a number of ways to accomplish this end and this article will discuss six of these methods that are utilized to support successful beekeeping.

The methods to be discussed include purchasing package bees, nucleus colonies, or established colonies as well as creating splits, performing swarm capture, or doing removals. For each method we will briefly define it and explain how it is performed and then focus on a systematic

comparison with the other methods. Comparisons will include weighing the advantages and disadvantages of each including each method's "fun factor", difficulty, cost, as well as the contribution of other factors such as queen quality, local adaptability, transmission of diseases and pests, Africanized genetics, feeding requirement, possibility of surplus honey production, and others. I hope that this comparative analysis of increase methods will be of interest to both beginner and experienced beekeepers.

Package Bees

A package is a collection of several pounds of honey bees from multiple donor colonies shaken into a screened box without associated frames, combs, or brood but with an unrelated queen in a separate cage. Packages are generally produced in warm climates in the spring and can be shipped through the US Postal Service or picked up at regional locations. Packages were a major method for increase in the 19th and 20th centuries including for Canadian beekeepers before the honey bee importation ban.

Installing package bees involves preparing a single story hive generally containing foundation, shaking the

bees into the hive with a feeder, and allowing for the release of the queen after a brief period of introduction.

Advantages include a high fun factor as a beekeeper is able to observe all new colony activities including comb building, egg-laying, brood development, and the storing of nectar and pollen. At the outset this is a small colony that is easy to manage and ideally suited to beginners. The difficulty of installation is actually quite low, queen quality is generally quite good with a young, prolific queen, and transmission of brood disease is not seen.

Disadvantages include a significant cost (generally \$90-140) and the fact that local adaptability is absent unless one's apiary is in a region producing packages and this contributes to a reputation of variable winter survival. Transmission of pests might include small hive beetles and varroa, Africanized genetics may be carried by these bees when shipped from certain regions, and these colonies generally have a feeding requirement for sugar syrup when installed. Production of surplus honey is uncommon during the first year unless packages are installed on drawn comb. Other factors include a significant risk of supercedure



Two recently installed bee packages



Transferring frames from a nucleus colony into a hive

during the first year, infrequent problems with acceptance of the introduced queen, and the requirement to learn how to install the package but this is relatively easy for even beginners to perform.

Package bees always come from warm climates but beekeeping vendors and bee clubs are a source of these bees or they may be directly purchased through the mail from sellers.

Nucleus Colony

A nucleus colony (“nuc”) is a small established colony generally with four to five frames of drawn comb containing brood, honey, pollen, and empty space for egg-laying, worker bees, and a queen. Nucs were an important in-apiary resource for Langstroth and Brother Adam and have become an important method of increase during the past quarter century.

Installation of a nuc into a standard hive is straightforward only requiring the transfer of combs and bees from the nucleus colony to the recipient hive generally with a feeder and frames of foundation.

Advantages include that the difficulty of installation is extremely low, queen quality should be good with a young prolific queen or an

Disadvantages include that the fun factor of installation is low, the cost is high to very high (\$125 to over \$200 for a “tested” nuc), and local adaptability may be unexpectedly absent even when purchasing from local beekeepers as nucleus queens are commonly reared in regions remote from where local nucleus colony sellers are located. Whenever used bee equipment is sold (such as with frames in a nucleus colony) there is a risk of transmission of brood disease, nucs also have a risk of transmission of pests including varroa and small hive beetles, and nucleus queens from regions with Africanized genetics can also carry these. Surplus honey will not be obtained with small nucs and those installed late in the beekeeping season or on frames without drawn comb. Other disadvantages include that nucs are frequently a variable product that may contain old and damaged frames, new foundation, an old queen, a queen introduced just prior to sale, or no queen at all and nucs have a reputation as a method for unscrupulous sellers to unload unwanted combs from their operation.

Nucleus colonies can be obtained from many regional beekeepers and one should always ask about the quality of the product from trusted beekeeping contacts and consider asking an apiary inspector about disease issues.

Full-sized Colony

A full-sized colony is generally a single or double deep established colony containing drawn comb, brood, honey, pollen, bees, and a queen with complete hive equipment including bottom board, hive bodies, and top cover.

Installation of a full-sized colony involves moving it to a desired permanent location and in the absence of heavy equipment requires some heavy lifting.

Advantages include that a locally sourced product could have local adaptability with a regionally reared queen, a low risk of Africanized genetics if located outside of a region with such genetics, generally the absence of a feeding requirement, a colony that is ready for surplus honey production in its first season, and other factors such as a ready pollination resource and the provision of full hive equipment.



Placing a queen cell into a split

Disadvantages include a low fun factor and a moderately high difficulty because of problems inherent in moving a large and heavy colony as well as issues for beginners such as difficulty finding the queen and the intimidation of learning from a large colony. The cost is higher than that of a nucleus colony, queen quality is commonly suspect with an older, less prolific queen, and local adaptability may be lacking depending on the source of the seller’s queens. There is also a real risk of transmission of diseases and pests including brood disease, varroa, and small hive beetles. Other factors could include poor condition of hive equipment.

Full-sized colonies may be obtained from retiring beekeepers whose reputation for disease management is known with certainty and can also be obtained from almond pollinators after almond pollination is completed.

Split (Divide)

Splits, or divides, are the product of splitting or dividing an established colony into several colonies. Although such daughter colonies can make their own queen splits generally use a queen cell or mated queen. Splits have been an important in-apiary method of increase for established beekeepers for more than 150 years.

There are many procedures for performing splits including a “walk-away” split by dividing a populous colony with ample resources into two with eggs and larvae in both parts or more generally using a new queen in splits containing two to four frames of brood of all ages with covering nurse bees from a strong colony or several colonies.

Advantages of splits include a moderately high fun factor and



Moving full-size colonies

overwintered “tested” queen, and local adaptability could be a plus with locally sourced queens. A nucleus colony might produce surplus honey in the first season if it is installed in a standard hive early in the season particularly with drawn comb. As a nuc is already an established colony there are no problems with queen acceptance with this method.

low cost (\$0 to \$50). Queen quality can be a focus of this method with a young, prolific queen, associated expected good winter survival, and the option of using hygienic or other pest-resistant queens or with queens with demonstrated local adaptability from regional queen breeders or one's own apiary. When using one's own frames for split creation the risk of transmission of diseases and pests is exceedingly low, in fact with predictable reduction in varroa by dilution, out-competition by the explosive brood-rearing that follows splitting, and interruption of the brood cycle particularly when using queen cells. One might produce surplus honey in the first season if splits are well-provisioned (including with drawn comb) and created early in the season. Other favorable factors include decreased incidence of swarming in colonies donating combs to splits, probably fewer winter losses, and the development of a self-sufficient sustainable apiary.

Disadvantages include that the difficulty of making splits is moderate for beginners and if using grafted queens from one's own apiary can be technically challenging even for experienced beekeepers. Queen quality issues include that an introduced queen might not be accepted, a potential for poor queen-rearing conditions particularly for "walk-away" splits, and questions about possible lower winter survival if using one's own queens. Local adaptability might be an issue if purchased queens are not regionally derived, Africanized genetics could be introduced if queens are obtained from regions with those genetics, there is generally a feeding requirement for producing splits, surplus honey would not be expected unless an early-created split is well provisioned, and another factor is that one should already have strong colonies to create splits limiting the application of this method to established beekeepers.

The source of inputs for splits generally include one's own bees and brood either with queen cells (including those produced by the beekeeper) or mated queens the latter of which are shipped from many suppliers or may be available locally.

Swarm Capture

Swarm capture as an increase method consists of capturing a swarm of bees when they first alight at their bivouac site or by placing a "swarm trap" ("bait hive") most commonly near one's own apiary or a source of feral survivor bees. Swarm capture is the oldest method of increase with skep and gum bee-keeping dependent upon it.

If obtaining a swarm from a bivouac site where a swarm has temporarily landed, the swarm is generally shaken into a container and then poured into the new hive or on a bedsheet surrounding the hive and then fed with sugar syrup. If using a swarm trap a box is placed in an area near managed or feral colonies. Generally the beekeeper assures that the box has a size, location, orientation, odor, and other qualities that are attractive to bees as a nest site.

Advantages of swarm capture include an extremely high fun factor



A swarm trap (bait hive) in a tree

with gentle bees and the observation of all colony activities. The cost is free, the bees might have local adaptability if they are cast off of locally adapted bees, and there is no risk of transmission of brood diseases. An other favorable factor is that these bees are generally productive builders of new comb on provided foundation.

Disadvantages include moderate difficulty for beginners in hiving a swarm, the possibility of poor queen quality with an older, less prolific queen in primary swarms, and the possibility of poor local adaptability if the swarm is obtained near a commercial apiary or bee yards with queens imported from other areas of the country. A feeding requirement is expected for these excellent

comb builders and surplus honey production cannot be relied upon in a swarm's first season. Other unfavorable factors include the possibility of selecting for "swarmy" bees, the difficulty of predicting when swarms will occur, poor winter survival with late season swarms, and the risk of injury when retrieving swarms from sites not near the ground.

Swarms can be the products of one's own or others' apiaries, locations near feral survivor colonies, or beekeepers can publicize their willingness to serve as a community resource to retrieve swarms.

Removal (Cut-out)

Removals (cut-outs) of bees from a cavity in structures such as a house or barn or from a bee tree are also a method to obtain bees.

The procedure of doing a "removal" involves exposing the colony nest, removing the bees (sometimes with a bee vacuum) and the comb, attaching the broken comb into foundationless frames, and placing them into a recipient hive.

Advantages include low cost with free bees and the possible expense of a new replacement queen (\$5 to \$30), a possibility of local adaptability of bees that might be considered "survivor stock", and an other factor that beekeepers can charge for such removals and develop a potentially profitable business in doing so.

Disadvantages include that the fun factor is quite low (unless doing "bee lining"), the difficulty is quite high with significant time and labor involved, unanticipated carpentry challenges, and the potential for falls and power tool injuries. Queen quality may be poor with a generally older, less prolific queen and a significant possibility of requiring queen replacement. There is a significant risk of transmission of diseases and pests particularly for brood disease and varroa and for this reason quarantine is considered important by many who perform cut-outs. Generally there is a feeding requirement for removals after being placed in new equipment, surplus honey is uncommonly obtained during the first season, and other potential problems include dealing with crazy comb, increased defensiveness, and liability issues



An exposed colony during a cut-out

disease should always be emphasized, for beginners I prioritize a low level of difficulty while for beekeepers with established colonies I prioritize low cost. Thus, I recommend beginners purchase package bees from a region without Africanized genetics or small hive beetles and learn from these colonies. Nucleus colonies would also be very attractive for beginners if they were assembled by providers who are known to produce a high quality product, with locally adapted queens, and a high level of assurance that they are free of disease and pests. For beekeepers with established colonies splits are an ideal skill to make increase with one's own or locally adapted queens or with queens imported for desirable hygienic or genetic traits. Swarm capture, particularly from one's own apiary is also a cost effective way to make increase. 🐝

Patrick Dwyer is an EAS Certified Master Beekeeper who enjoys beekeeping in Otsego County, New York.

when working on someone else's property.

Referrals for removals are commonly obtained by word of mouth and by publicizing one's willingness to do these with fire departments, contractors, foresters, and tree surgeons.

Summary

There are a number of ways of either obtaining one's first bees or making increase in a bee yard includ-

ing purchasing package bees, nucleus colonies, or established colonies as well as creating splits, performing swarm capture, or doing removals. Except for the creation of splits by those who do not currently have any bees any of these methods may be used depending on the assessment of the method's relative merits by the beekeeper.

While I believe that the fun factor and low risk of transmission of brood

Comparison table of increase methods

	Package	Nucleus	Estab. Colony	Split	Swarm	Cut-Out
Fun	✓			✓	✓	No
Low Difficulty	✓	✓	No			No
Low Cost				✓	✓	✓
Local Adapted	No	?	?	?	?	✓
Low Risk Brood Dz	✓	!	!	✓	✓	!
Other	supercede	variable product	transport	decreased swarming	swarmy bees?	carpentry

INSTALLING PACKAGES

~Kim Flottum



Bees are collected, either by shaking frames in to a funnel that fills the package, or by bouncing a whole super over a collection box. A queen excluder on top keeps the queen in the super. Then bees in the box are then poured into a package.

Packages removed from the field and assembled in the warehouse, where a feeder can and a queen are added, and the opening covered to keep them all in.

Packages are shipped in specialized trailers with climate control.



Packages of honey bees come from, basically, two areas of the U.S., the southeast, mainly southern Georgia and northern Florida, and from the west, mainly central and northern California.



There are differences in the queens you get from these places because of where they are raised and how they are produced. To make a package, in the SE, producers search for the queen in the production colonies and once found, isolate her, then shake about a third of the worker bees in that colony into a collection container to be doled out and weighed and put into a three pound package. West coast package producers simply sift

a super or two of bees from a colony into a container that has a queen excluder on top, so only workers go into the collection container. Workers are poured into the package, a can of sugar syrup is added along with a queen raised specifically for this purpose and the entrance sealed. The package is then shipped in special trailers, with air conditioning and humidity controls to a local supplier who then distributes them to you.





Pick up the bees. Most of us have a car. Put cardboard or several layers of newspaper on the back seat to place the package on. When you arrive expect a crowd of anxious beekeepers – just like you. Make sure you get the kind of bees you ordered – Italian, Carniolan, Russian, Buckfast – and that the queen is marked. Your queen may arrive marked, or she may get marked there. The bees should be hanging around the queen and feeder can, and there should be only a very few dead bees on the bottom of the cage. If more than 20 the package may

be old bees, starving, overheated or subjected to something not to their liking. Check with the supplier if there are lots of dead bees. Bring



a mister with sugar syrup in it and before you put the package in the car, feed the bees. This will settle them down a bit and give them something to do while on the trip home. This is why you need the newspaper. Don't let the car overheat. Tend toward air conditioning to keep the bees cool.

Often a local supplier will drive to a regional drop off

and pick up only a few packages at a time, spreading out the delivery dates. Once they arrive they sit in the shade or a warehouse, are sprayed with water to keep them cool (a package will get very, very warm, and if not cooled will overheat and die), and sprayed with sugar syrup for feed. Make sure your queen is marked. Check before you leave.



Your supplier will tell you when the packages are to arrive so you can be prepared the day they come in. Have your hive stand ready, make sure you have plenty of sugar syrup ready for feeding and your boxes, frames, bottoms and covers are ready. If new, paint the boxes. The day the packages arrive, before you

extra boxes to house the feeders on top of the box you will put the bees in, rubber bands to hold the queen cage on a frame if there's no way to hang it from the top bar, a flat head screwdriver for removing the feeder can if it's stuck in the opening of the package. If the weather doesn't cooperate when you get back home, put your package in a cool, dark place until you can get it introduced. A garage or basement is common. Feed, feed, feed the bees. Assume the feeder can is empty and they have no food. Generously spray both sides of the package with your

go to pick them up, get all your equipment out to the beeyard. Smoker and fuel, the box and frames the bees will go in along with the bottom board, inner cover and cover, hive tools, spray mister full of 1:1 sugar syrup,

Getting ready. Make sure your hive stand is strong, gather all your tools and be ready. Have feeder pails and mister filled with 1:1 sugar syrup.





mister three or four times a day to the point the bees are wet. This many bees will easily consume a quart of syrup in 24 hours, so don't get cheap now. They will starve if indeed the can is empty and you don't feed. Introduce as soon as possible when the weather clears.



When ready, assemble everything in the bee yard. To begin, thump the package to settle the bees on the bottom. Remove the cover and the queen and keep her warm. Remove 4 or 5 frames from you super. Thump again, remove can and cover and dump the bees in the super. Replace the frames, put the pail over the inner cover hole, put a super on to protect the feeder, close and done. If installing in a top bar hive, put a feeder (here a Boardman feeder works well) in one end without bars, put bars in about 2/3 of the hive, dump the bees where the opening is, replace bars and close.

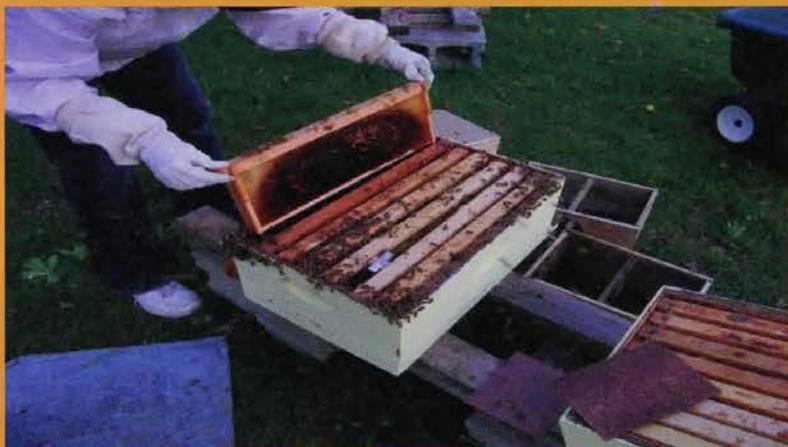
When the time is right, install your package. Ideally, this is toward evening on a warm, friendly day, but we don't always have that luxury. Sooner rather than later, within reason is the rule. Make sure all your equipment is in the beeyard. Put on your beesuit. You probably won't need your smoker, but light it anyway, just for the practice and have it ready. Make sure your feeder pail and your mister are full of 1:1 sugar syrup. Inspect the package again to make sure the bees are doing well. Mist them to settle them down.

When the time is right, install your package. Ideally, this is toward evening on a warm friendly day, but we don't always have that luxury.

Place the package on a firm surface and remove the cover over the feeder can if there is one. If the queen cage is right there remove it, blow off any clinging bees and put her in your pocket for protection. If she's inside the cage, carefully thump the cage to knock the bees off the can and onto the floor. Pry the feeder can out, remove the queen and replace the cover. Remove three or four frames from your prepared box and hang the queen cage, using the metal hook or hanger attached to the cage. If there isn't one, or it doesn't work, use the rubber band to hold the cage near the top and end of the frame. Don't put her in the middle because if the feed can leaks she will drown. Have the inner cover handy. Mist the bees. Knock them down again, give them a minute to settle a bit, then remove the feeder can completely.

Cover the opening, take a breath, and begin slowly dumping the bees into the opening in the box. Shake it a little, tip it back and forth a few times and get most of them out. Then put the package in front of the hive and let the remaining bees find home. Carefully replace the frames, letting their own weight push the bees out of the way. When done, put on the inner cover, the feed pail over the hole, the extra box to protect the pail, and finally the cover. It's done. Give them a day or so to settle in, make sure the feed pail stays full and that the queen gets released in a week or so.

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