

THE HIVE TOOL

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President Frame**

At our last meeting I was reminded of the role CMBA plays in introducing people to beekeeping. We are the entry point for many new beekeepers, the place where the imagined idea of beekeeping becomes factual and real. Some folks have done their homework, sought information online or in the library, watched a video or something on YouTube, read a book or two. But we are the people who personify the word "beekeeper." We make beekeeping something more than simply a notion or fantasy.

I talked to one couple who live in a rural area of Carroll County who are well on their way to getting started. They've figured out where to site their beehives, what they'll need to purchase, and how they'll deal with a possibly hostile neighbor. But now what? What's the next step? And here they were, talking to a "real" beekeeper, hoping to get some answers, and the floodgates of unanswered questions opened. As other beekeepers joined our conversation, I felt confident they were in good hands having their questions answered and I moved on.

Another couple with a young son were less prepared but no less eager to discover what beekeeping was all about. They too were welcomed and instead of getting answers to their questions, they were soon being questioned by experienced beekeepers about their situation - where do they live? Why do they want to keep bees? Would they like to join CMBA and take the short course?

Yet another couple, younger than the others, had emailed me to ask where they could go to learn more about beekeeping, could they become apprenticed to an experienced beekeeper? I had written back suggesting they come to a CMBA meeting and talking to some of our members, and here they were, engaged in conversations, learning more in a few minutes with a beekeeper than they might otherwise online or in a library. Don't underestimate your value as a beekeeper to a novice. Your experience, whatever it may be, brings beekeeping to life, gives it a face and a name and a place. The encouragement you provide is invaluable to a beginner.

And it's your active involvement in CMBA that makes this happen. The beekeepers attending last month's meeting made it possible for these folks. As a former school teacher and somewhat-educated person, I understand the importance of "giving-back," of serving the larger community and culture. In terms of bee culture, we need people in our association who share this belief and who are willing to give their time and energy, their knowledge and experience to fulfill our mission. Do you know our mission statement? Here it is:

"CMBA was founded in 1966 and incorporated in 1977. The association is established as a 501(3) non-profit organization.

The purpose of the association is to educate beekeepers and the public about the importance of beekeeping to agriculture and life in general; to inform the public on matters of importance in beekeeping; and to support research into all aspects of beekeeping. CMBA promotes the values and pleasures of beekeeping."

In November, at our Annual Meeting, we will hold elections 'for new' officers. I think beekeeping experience matters less than people experience in this regard. We need people who believe in our mission and feel they can guide our organization in that direction. I know there are good folks in CMBA; I hope they will step forward to serve a term or two in office, to share with others some of the joys they experience through beekeeping. Please come to vote and support our new officers.

Also at November's Annual Meeting, I will present the Annual Stewardship Report and Bob Crouse will give a Financial Statement. Our program will be interesting, perhaps especially for new beekeepers, since it will cover alternative methods of beekeeping, different types of hives and associated different management techniques. Actually, even as an old (read: long-time) beekeeper, I'm looking forward to this program.

There will NOT be a regular CMBA meeting or Board of Directors meeting in December. Instead, mark your calendars for December 6th for our annual banquet. This pot-luck dinner welcomes the holidays and is for the entire family with our "everybody wins" fun raffle. More about this next month. Next month's newsletter will also contain the 2008 Stewardship Report and Financial Statement. If I don't see you before then, have a Happy Thanksgiving!

My Lawn – My Bees Must I choose one or the other?

By James E. Tew

Reprinted from Bee Culture October 2008

Too much of anything

I suppose too much of anything can pretty much be a bad thing. I grew up near a large city swimming pool. It cost the ridiculously low fee of 10¢ to swim - per day. That was actually a nickel per morning and a nickel per afternoon. My Mom loved it. I was fenced in. I was monitored by professional life guards and it was cheap. I spent thousands of hours in that pool each Summer. Now, as an adult, I never, never have the urge to go swimming. Swimming is something I only do when I need to.

I sat underneath pecan trees at my grandparent's farm in the cab of a 1952 Dodge Pickup and practiced shifting the three-on-the-column transmission. My Grandfather was my instructor. I worked on it for months. I dreamed of the day I could legally drive (even though on back country roads I was already the primary driver). I was licensed at 16 and immediately drove everywhere for everyone. Over time, driving became routine. Over more time, driving became a chore. Now, driving is something I only do when I need to.

I have a whole list of these life's evolutions - water skiing, fishing, and hunting - but the one tired area I want to discuss with you here is cutting lawns. My first income generating job was cutting grass. Times were different then. I and a friend - James - would push our mowers up/down various streets, looking for shaggy lawns. We were young teen businessmen. For \$1.25 (total) we cut an average urban yard. A larger yard - including trimming the curbs by hand - was \$2.50. Most people couldn't afford the higher quality job and just stayed with the basic cut. At our peak, we were cutting about twenty-seven lawns per week. Remember that the mowers were not self-propelled and we had to walk to each job pushing a mower. As time passed and I got better paying jobs, we reduced our numbers, but I kept some of the better yards into my very early 20s. I never grew to hate grass-cutting, but it was (and is) work. Now, cutting grass is something I only do when the lawn really needs it. But when and why does a lawn really need cutting?

When does a lawn really need mowing?

I realize that many of you have already put your mowers away for the year - but the next mowing season is not that far away. So you shouldn't feel too smug.

My mowing standards are liberal. I like to see grass clipping flooding from the mower chute. I like a clear, easy line to follow when I turn around. I don't use a vacuum mower, but I love self-propelled mowers. Since I don't use a lot of herbicides, I have a lot of weed contaminants. *Stop!* Why in the world am I putting you through all this non-bee related discussion? Simply because **it is bee-related**.

Everyone is a bit different.

I need to say that for all of you who mow regularly using vacuums or mulching mowers - or whatever - I am not criticizing you. Each of you reading this article has your personal reasons for managing your lawn in your way. But every year - every year - I am struck by the oddness of me feeling guilty for not regularly mowing lush clover that is alive with bee foragers and butterflies. But I can tell you flatly, that on my street of 40 or houses, I am the only one who is having these feelings. Take a drive down my street during the growing season. It will be easy to pick out my lawn. It's the dandelion-yellow one.

I don't have a good plan.

For several mowing seasons, I have tinkered with doing something other than just mowing flowering weeds and plants. This past season, I left nearly one-half acre completely unmowed for about 10 weeks. The grass, clovers and weeds grew nearly to my knees. I enjoyed multiple species of bees, butterflies, and a hoard of Japanese Beetles, on my run-away yard. Animal trails evolved. I truly liked the environment, but objectively, it looked a neglected mess. My neighbor, whose yard is literally picture perfect, at a social function asked, *"Say, I don't mean to pry, but what's up with your back yard?"* Another neighbor politely implied that the weed infestation in her yard was due to my lack of weed control. There is, no doubt, some truth in that suspicion. Even the city in which I live has a mowing ordinance. I wondered at what point was I in violation of that regulation. For these reasons, and others, I mowed the back yard. I did the deed in the early evening when all the foragers were home in bed. The next day, the place was quiet and still. Why didn't I feel good about it?

I need to be crystal clear.

I am not on a campaign to revert to pre-lawn days; however, I can remember those days. Remember the comments I made above about my grand dad teaching me to drive? He did it on a farmhouse front "lawn" that was about three acres of exposed sandy dirt and weeds. My grandmother diligently "swept" the yards once or twice per week with heavy stick brooms she made from local plants. Any grass sprig that tried to take root got hoed. There was a practical reason for this effort. Any bug that ventured onto the sand was considered to be chicken feed by free-ranging chickens. A venturesome snake that made a dash from the farm outbuildings to the house faced certain death on the trip. My grandparents could not conceive of anyone actually wanting grass to grow in the place of a nicely swept yard. In an article entitled, *The History of Lawns in America* it is said, *"Green, weed-free lawns so common today didn't exist in America until the late 18th century. Instead, the area just outside the front door of a typical rural home was typically packed dirt or perhaps a cottage garden that contained a mix of flowers, herbs, and vegetables."* Apparently, that was a bad thing that needing improving. A well-kept lawn symbolized disposable wealth and an ability to appreciate the finer things in life". But before we all could really have a dependable lawn, we had to wait for both the water hose and the rotary mower to be developed. Along the way, sod and grass seed producers had to evolve. This was not an overnight transition.

Why grass?

How did clover get labeled as a weed? It fixes nitrogen. It smells nice. It is drought-tolerant. It reseeds itself. It provides food for insects and other wildlife and it feels nice under bare feet - but by present standards, it's a weed requiring chemical applications of herbicides. Back in 1915, when the USDA, in collaboration with the U.S. Golf Association developed suitable strains of grass for golf courses and lawns, why were other plant species not considered? I don't golf on either my front or my back lawn. But all my choices for my lawn are mowable, golf course-type grasses such as: Bermuda grass, Fescue, or Blue Grass.

You want cheese on that?

I like cheese fine, but I simply don't want it on everything I eat. Yet, it is a constant struggle to stop the addition of cheese to burgers, sandwiches, potatoes, eggs, grits, and salads. (I do want cheese on pizza.) I suppose that one day soon, it will be salt, pepper, and cheese that routinely sit on the table. It seems to me that, primarily through marketing, a product and a procedure becomes established like putting cheese on foods and maintaining grass lawns. It becomes a way of life. You *don't* want cheese on that? You actually *want* a plant option besides grass for your lawn? How weird is that?

Mr. Mouth

Up to this point, I have been Mr. Mouth, pointing out the various things I feel are wrong. Okay, so what do I want and what am I willing to do? I honestly don't know. I do know that I have few non-grass options (actually none) as lawn plant. I do know that, from a bee stand point, mowing flowering clover, is not a good thing to do. I do know that I killed innumerable bees of all species and drove away butterflies while running my mower. I do know that if left unmowed, a clover-based lawn looks shaggy and unkempt. I do know that animal life I don't particularly want to have as yard neighbors seemed to appreciate the bonanza, too (raccoons, ground hogs, rabbits,

and deer). I don't want more flower garden space that requires weeding, pruning and maintenance. As it is, I can't even keep the grass mowed and I can sit on a mower with minimal effort for my part for that job. Really, what do you think several large flower beds would look like at my place?

Where are the beekeepers?

Gardeners are clearly doing their part. Lovely flower beds, neatly maintained, outlined with grass and stone paths look great. Most gardeners seem to do more with their lawn-land than just cut grass. Yet they must work at it. But where are the beekeepers? Twenty-six million of us paid professional lawn management people to do our lawn work. We spend about \$17,000,000,000 per year on our grass lawns. Why has the bee industry not been more involved in asking for alternatives to grass lawns? I have either presented or listened to innumerable talks on bee plants but that was all for gardens or landscaping. In all my beekeeping years, I have not heard a single presentation on ways to maintain a neat, non-grass lawn that was both manageable and bee friendly. I have never heard of one plant breeder who was trying to develop lawn-type non-grass plant species.

Certified back yards - an alternative to the modern grass lawn?

There are programs all across the country that will help homeowners "certify" their back yard as environmentally friendly. The grass lawn vs. non-grass lawn issue I have been discussing is only one of several primary points of these programs. These programs offer support for land that is more than just chemically treated, fertilized and mowed. The National Wildlife Federation's program has similar points as other certification programs. The main areas are:

- **Food Sources.** For example: Native plants, seeds, fruits, nuts, berries, nectar
- **Water Sources.** For example: Birdbath, pond, water garden, stream
- **Places for Cover.** For example: Thicket, rock pile, birdhouse
- **Places to Raise Young.** For example: Dense shrubs, vegetation, nesting box, pond
- **Sustainable Gardening.** For example: Mulch, compost, rain garden, chemical-free fertilizer

Upon meeting the requirements, a placard can be posted allowing you to boast that your yard is an ecological haven. I haven't done this and I don't know anyone who has, but there are abundant web references to these programs so someone is doing it.

My sense of uneasiness.

I've not done a good job in this article. I don't feel that I have explained my thoughts very well. I don't hate grass. I don't disapprove of people who are in the lawn care business. I don't look askance at people who mow on a regular basis. But I can't get away from my one persistent feeling - every mowing season, I feel badly about eradicating and mowing plants that are supportive of my bees. I don't know what else to do. If I don't mow, my yard goes wild. If I do mow, my yard looks like a poorly maintained golf course. I don't feel a need to manhandle my yard but would rather co-exist with it. I don't feel a pressing need to kill absolutely every weed. They are only going to grow back, but if I don't control them to some degree, they will overrun everything. There presently is no methodology for anything but a grass lawn. There must be an alternative. I just don't know what it is.

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Cell Finishers, Drones & Evaluating Queens

By Larry Connor

Reprinted from Bee Culture October 2008

Natural, healthy hives produce some of the best-fed queens during swarming and supercedure.

Cell finishers (or builders) attempt to duplicate the high population and crowding conditions found during swarming, and create an area of reduced queen pheromone similar to supercedure.

The Cell Finisher

Select a strong colony; or several, depending on your queen production needs. Early in the season select overwintered colonies with young queens and stimulate brood production by feeding protein and syrup. In Northern states, start feeding pollen patties in late February or early March. When weather permits sugar syrup feeding. Or use a candy board starting in February. In Southern states, feeding may start in January or early February. Once you start feeding, stay with it; do not leave the bees in a growth mode without food available to support that growth.

When maples are in bloom, these colonies may be ready to swarm because of your feeding. Watch carefully and eliminate queen cells (save some for royal jelly). You may want to remove bees and brood for an increase colony. You must keep the population at full throttle without permitting swarming.

There is a late-season option if you decided to raise queens and did not have a plan of prior feeding. You can compensate for the reduced colony strength by adding frames of ready-to-emerge worker brood to the cell finisher to



Placement of drone comb in the number three position in the brood nest of a good strong colony from which you want to make drones.

boost bee populations. I find this better than adding bulk bees (packages) to the colonies, since this sometimes starts fighting.

You may begin grafting queens when you have over 100 drones in the purple-eyed stage or older for every queen you intend to produce. Because drones take longer to develop and are slower to reach sexual maturity, this delay in queen cell production will produce right-aged queens and drones. It is critical to check this anytime you start to graft. If you are producing queens in the late Summer and Fall, make sure there are still drones in production or you may have virgins

flying to drone congregation areas (DCA's) with a reduced and ineffective population of waiting and eager virgin drones.

Below we discuss drone production. For now, just remember that the drones in your cell finisher will probably not mate with the queens if they are both in the same apiary. But cell finishers will produce drone brood, so be ready to deal with it. Rotate comb into the colony for drone production only if the queen is of a type producing target drones for your operation.

When you are ready to start cell production, follow these steps every 10 days. This will insure plenty of bees in the hive and keep the colony booming. It will also keep a large number of queen cells in production.

1. Find the queen - You need to position the queen below the queen excluder in a two-box unit (deep or medium). Check all frames for the queen, and when you find her, set her aside and look for a second queen.

Mother-daughter queen combos are not unusual during the spring when queen replacement is linked with strong colony strength.

2. Put sealed brood and empty frames in the box below the excluder. Make sure the queen is carefully moved to the lower box, preferably while on a frame of brood, and the frame gently pushed together with another to prevent damage to her large body.

3. Carefully position the queen excluder on top of the lower hive body. In a hive body above the excluder center all open brood (eggs and larvae) plus one or more frames of pollen. Center the brood frames, and place the food frames at their side. Fill the rest of the box with frames except for the space needed for the grafting frames between brood frames.

4. Leave space for one or two grafting bars in the top box or have frames marked so they may efficiently located and removed when the queen cells, "the graft" is added to the cell finisher.

5. Feed the colony with thin sugar syrup, starting several days before you position the cells into the colony. This is true even when the colony is strong and there is a flow going on. Feed anyway. Don't sell the honey, cause now it's funny. Add fumigilin as a medication against Nosema of both species.

6. Every 10 days rotate the brood frames. Above the excluder the formerly open brood above will be sealed so put it down into the lower hive body. Either find the queen or carefully brush the bees off frames of open brood into the lower hive body. It is absolutely essential that you keep the queen downstairs. Because of all the heavy feeding you may have more frames of brood than you can correctly position. In that case, remove some brood frames to strengthen another hive or make an increase colony.

Drone production

Most beekeepers consider drones as part of their colony's everyday life, and there are plenty of them. The biology is simple: drones are produced and maintained only as the colony's needs dictate. There are rarely too many drones. Then the workers execute them at the end of the season.

For even the smallest queen producer, the maintenance of strong colonies of desired stock will ensure good drone supplies for ordinary mating. When you want to make queens, you will need a lot of drones to mate with one queen. I think that 100 drones, at sealed brood stage will give you enough drones for one queen. Drones die virgins 95% of the time.

Installing drone comb foundation and comb into desirable colonies will keep the number of drones at an optimal level. Pierco makes a green plastic comb that is easy to spot in the hive. It can be added to the hive as needed four to six weeks before grafting will start. Dadant makes a wax drone comb foundation. Paint the top of the frames green so they will be easier to locate.

Adding drone comb will unintentionally stimulate *Varroa* mite reproduction. *Varroa destructor* breeds better in 24-day drones than 21-day workers by a factor of three to five to 1.2. A few generations of that and the hive is dead. So have a control plan. Or it will be more than the drones that must face the executors pale.



Close-up of cells in cell builder. Some webbing is taking place.

Queen and Nucleus Evaluation

The big difference between a queen propagator and a bee breeder is the effective use of selection techniques used by the breeder often overlooked by the propagator. Many queen producers propagate only, like cooks with cookie cutters, making many copies from the same old formula used by granddad years before. Many graft from the best colonies in their operation in a southern state, Hawaii, or California. These are not the same environments as the rest of the beekeepers use. Fortunately, some of the more progressive propagators are making efforts to become bee breeders. For starters, they are buying stock selected for hygienic behavior.

Queen breeders are usually university and USDA employees charged with stock improvement. I was fortunate to know three of the best: Drs. Bud Cale, Jr. (Dadant & Sons, Inc), Walter Rothenbuhler (Ohio State), and Harry Laidlaw, Jr. (Univ. Calif. Davis). Bud Cale was unique since he worked for a bee supply company and earned his doctorate with corn geneticists in Iowa to develop true hybrid bees using the hybrid corn model of inbreeding and crossing these lines utilizing instrumental insemination. His Starline and Midnite hybrids no longer exist, but the Starline was the beginning gene pool for the Minnesota Hygienic strains.



Inspect the emerged cell to confirm that the intended queen emerged from the cell. If the time line is correct, the queen you installed is yours.

We are in a new era of bee breeding and queen production. The new breeder can be any beekeeper with the training and skills that allow them to select more than just their "best colonies," but use standardized testing for making controlled measurements. Success will come to those who develop a reliable, predictable, mite-resistant and productive line. If you have one or a few survivor colonies, that does not make you a bee breeder, since the selection was non-directed. But if you set up apiaries with high mite loads and test for hygienic behavior from the survivors, you can start calling yourself a bee breeder.

Evaluating new queens

To evaluate the queens produced by our method of starters, finishers and mating nuclei, we must keep in mind that it takes time for the queen to turn over the population of bees in the nucleus. Also, that small colony is only a predictive tool for the full colony. As the nucleus is allowed to grow, or the queen is used in a full-sized unit, the dynamic within the colony between the workers and the queen will change. Defensiveness may become more pronounced in a larger colony than a small one. Small colonies seem to be better at *Varroa* mite control when compared to larger colonies. This may be something to do with the ratio of nurse bees to field bees.

Brother Adam, in his effort to find tracheal mite resistance, used overwintered nucleus colonies as his basis of comparison before putting queens into production colonies. This is a two-step evaluation requiring years of careful observations. The queen was kept in a small nucleus from mid-summer to spring and evaluated there. Many queens were removed at this point if they failed to meet the monk's expectations or testing levels. The second year the colonies were in full-sized colonies and evaluated

for mite resistance, productivity, and general characteristics.

Brother Adam's approach was borne, in part, out of limited economics. How does a small bee breeder with finite resources test a large number of queens? Brother Adam found that the overwintered nucleus was an ideal answer.

Evaluation in the nucleus - Once the queen has replaced the bee population, you can look at several characteristics. Check egg-laying rate, buildup rate in the spring, temper (defensiveness) of the bees, temperament (how quiet are the bees on the combs), housekeeping (removal of debris), propolis use, uniformity of the brood pattern (sex alleles), hygienic traits (removal of frozen brood), and much more.

Evaluation in the hive - All of the observations listed above may be revisited, as well as full-colony issues: wintering (or summering in the tropics and desert), production (pollen and nectar), defensiveness, and hygienics. Larger numbers of bees may provide more individuals of each sub population that support traits that are not clearly expressed in the nucleus. Each subfamily comes from each drone the queen mated with.

How do you record data? Make it easy for yourself. Instead of weighing each colony and counting every bee, count the number of frames of honey produced and the number of frames of bees. Make estimates of the percent age of missed cells due to inbreeding and pollen stores. Use a one to five scale to record subjective observations: defensiveness, temperament, housekeeping, propolis use as examples.

Selection of high or low lines for certain traits - Let's take a trait like pollen collection. You can select for both high and low pollen collection simply by measuring the total pollen collected in pollen traps during an identical time period. Then cross daughters from the very highest pollen collector with drones from the next highest via instrumental insemination. I suggest you discuss your ideas with someone who conducts II. Dr. Joe Latshaw in Columbus, Ohio is set up for this in the Midwestern U.S.

Something to keep in mind when you learn about bees and queen rearing:

Eggs Hatch - Adult Bees Emerge

When a bee egg hatches, there is no shell. The protective layer, the structurally complex but very thin chorion, simply softens and the tissue is reabsorbed by the larva that lies on the bottom of the cell.

*Dr. Connor's books, including *Bee Sex Essentials*, are offered for sale through many bee supply dealers, and at his website, www.wicwas.com. A PayPal store is available on that site for those who want to have the convenience of purchase via this option. You can also find information about the Second North Central Queen Assembly, set for October 11, at the website, including a registration form and payment options.*

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DATES TO REMEMBER

General Meeting – November 4, 2008 – at Oregon Ridge Nature Center. 7:30PM.
Discussion about Top Bar Hives
Ever wondered if there was an alternative to the ‘traditional’ Langstroth hive?
Jon Bealer will describe the Top Bar Hive, its origins, design and some differences and potential benefits. In addition, we hope to have a panel discussion, or Q&A session, so you can put your questions to beekeepers who use this type of hive.

Board Meeting – November 17, 2008 – 7 PM at Oregon Ridge Nature Center.

Annual Dinner Meeting – December 6, 2008 Oregon Ridge Nature Center. 6 PM. Pot luck dinner to close out the beekeeping year in grand style.

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