

The Traveling Beekeeper



*A Larger View of
Beekeeping in North America*

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With all the talk about Colony Collapse Disorder, the routine and familiar challenges and occasional problems facing the beekeeping industry, it seems important to step back and look at the basics of animal husbandry so that we can do something positive. As I travel around the country talking and working with beekeepers, there is one common theme that reappears. It is also a theme that is brought up by non-beekeepers, too, whenever we discuss the future of beekeeping.

Some folks want to put the blame for CCD on planetary warming, or the new pesticides. Others are eager to pin the sin on sloppy, lazy beekeeping, an issue that strikes me as ironic when I see life-long beekeepers suffering with heavy losses. Did they suddenly lose their experience of working bees? Or have they lost their brain function for some reason—Is this the real problem with the impact of cell phones on beekeeping—maybe it is the beekeepers' brains that have been fried extra crispy.

If you have been routinely reading my articles, you know that I am a huge advocate of developing local queen production and breeding bees bred for your current conditions. This past summer I taught about 100 beekeepers in intensive hands-on programs offered from Texas to Cape Cod. My best success was the six-session program where we followed queen production in real queen time—the time it takes a female larvae to metamorphose from egg to adult queen, mate, and start to lay. During the course's 24 hours of instruction, I felt we had adequate time to teach, repeat and approach in different ways the process used in the best success in teaching queen rearing and discussing bee breeding. Many of the participants took queen cells home and successfully introduced them into their own nuclei. There was a lot of excitement when the entire class checked the mating nuclei they

made up with their own cells and found eggs and larvae in the bottom of the cells, and large queens (I admit, sometimes larger than I expected looking at the queen

cells), working the frames. It was pretty exciting to see the expressions on these folk's faces.

In the course I focus on the basics, the



What is the point of public and private land that are taken over by dry brown grass during a portion of the season? There is no apparent benefit of such plantings except to provide excuses for more powerful lawnmowers and additional chemical use to feed and weed shallow rooted grass plants that instinctively go dormant when the season dries out!



Many roadsides are filled with white and yellow sweet clover. Why pay to mow such beneficial plants?

essentials of beekeeping. Thus, queen production, cell sales, and development of localized stocks bred to withstand native conditions, are all important to me. Without them the beekeeping industry relies on far too few individual breeder queens. We need a wider, more diverse base of queen producers/breeders using as unrelated a stock as possible to produce fertile queens and drones for mating.

The second area critical for me is the basic concern of bee botany. Nothing was more apparent in July as I traveled across Michigan, Indiana and Ohio to the Heartland Apicultural Society meeting in Huntington, West Virginia, than the dominance of corn on the landscape, followed by soybeans and wheat. Alfalfa fields, indeed any forage crop, were few. As beekeepers we have little impact on most aspects of agriculture. This is what beekeepers would like to change, and non-beekeepers want to know what they can do to help the bees—and thus indirectly help the beekeeper. It is a huge challenge. While it seems unlikely that one beekeeper can plant enough nectar plants to increase production, I want to believe that the planting of nectar and pollen plants by tens of thousands of non-beekeepers, coupled with governmental planting of bee serviceable flowers, shrubs and trees, will lead to success when done by agencies at the local, state and national levels.

As I travel, I already see differences in planting policies along roadsides. Maybe is a lack of funding deficit, but some states allow the median and sides of interstates to grow large and wonderful nectar-secreting plants grow in abandon. To this beekeeper, it seems to be excellent land management. To the ornithologist, it may be a matter of keeping bird nesting sites protected while song and game birds raise their young. But when you compare that to the Ohio

Turnpike, where they were mowing beautiful sweet clover plants to a bleak grassy plain, the summer flora was essentially done for the year.

In graduate school I studied two commercial crops for their pollination requirements. My masters investigated the pollination of cucumbers for pickles grown for a single destructive harvest. The separation of staminate (male) and pistillate (female) flowers on the plant, or on separate plants, absolutely require a pollination agent. And the primary pollinator, without even a close competitor, is the honey bee. As a result, almost all pickling cucumbers (as well as most fresh market) are grown with rented honey bee colonies.

For the bees, it is not such a good deal. The nectar secreted by the flowers is attractive to foragers, but the number of flowers PER ACRE is low. I frequently learn of colonies too weak to survive coming out of pickle fields.

It is a far different story with the subject of my doctoral research, where I worked on the components of strawberry flower pollination. Instead of separate male and female flowers, the floral structure of a future strawberry is complete, having the pollen-producing anthers surrounding the center of pistils. Now, each pistil requires pollination, but a combination of physical proximity to the anthers, wind shaking of the flowers and bee pollination get the job done.

I found an unstated grower bias against strawberry cultivars that require more bee pollination than the cultivars that are largely self-pollinated. Why? Because a self-pollinated flower sets a fruit when the weather prevents bee flight. The yields are predictable if you do nothing. If you can eliminate bee pollination, you still have a berry crop. The system is not perfect, and many years I find poorly pollinated berries in the market during the winter months. No

surprise there, because there are no bees in the fields, and if they were, poor weather conditions and high wind likely would reduce bee foraging. Ironically, the really poorly pollinated strawberries, almost always the first to bloom, fail to develop at all.

Strawberry flowers on the farm in Michigan attract a lot bees, honey bees, halictus species (sweat bees), ground (digger) bees, and a few bumble bees. The nectar and pollen are usually rich and attractive. I'd keep a few bees around any strawberry field as insurance for better berry set. I take a great deal of delight showing growers the berries that never get pollinated and never set fruit in their fields. It does not happen all the time, but these are the first berries, and usually the ones worth the most money in the fresh market.

Right now the United States beekeeping industry is largely dependent upon the almond growers in California. Almonds require bee pollination to move pollen from one cultivar to another, much like apples, where you need to plan compatible pollen lines for fruit set. But what happens, at some time in the future, when some clever plant breeder develops an absolutely self-fertile cultivar? If the final product is acceptable to the grower's customers—the candy makers, the health food markets, and the Chinese, well, we will probably see entire orchards of old varieties pushed out to plant the new no-bees-required cultivars. Fortunately, there is no such variety at work. But you can bet that a lot of growers would just love to get the bees off their orchards—they represent a lot of work and a big expense. Of course, for now, they are the key factor for the success of an almond crop.

Since I was in 4-H in the 1950s, I have been pointing cameras at bees' rear ends to discover the secrets of bees on flowers as foragers for pollen and nectar and how they pollinate crops. I am not as focused as Dr. George Ayers appears to be at working out the identification of all these plants, but I do share his passion for the study of bee-flower relationships. I am interested in more than just honey bees, but there is not a great deal of cross pollination (how could I avoid this term) between honey bee and non *Apis* bee people. I find that sad.

So, having spend the past few years focused on bee breeding, queen rearing and promoting both (with no intended end in site), I am sticking my neck out to promote the bee-flower relationship by both beekeepers and non-beekeepers. What are some of my focus points on this? Here is my preliminary list.

1. Bee flowers in every yard. It really annoys me that so many people are afraid of bees, since they had to be taught this from a very early age. We need to get out there and show folks how innocent honey bee foragers are when working flowers. I'd like to start with every 5-year old in the country

with their entomophobic parents locked in the classroom with the kids' equally bees-are-DANGEROUS teacher. We need to get the American middle class to grow flowers for bees. This will spill over to the agricultural and hopefully to the eco movement (although the eco group obsesses over the pedigree of the flower and not its importance to pollinators and other flower visitors).

2. Replace lawn grass with flowering flowers. We need to promote a seed mix of Dutch white clover, bird's-foot trefoil and mowable fleabanes and asters for a lawn replacement. OK, these do not make a nice putting green, but the rest of the golf course can be bee friendly. Wear shoes and long pants kiddies and teach them to smell the flowers and listen to the humm of the bees.
3. Plants for field planting for beekeepers and their supporters. If not growing corn, wheat or beans, there are millions of acres where the primary flowers are not bee flowers. Some fields support bees—due to one blooming plant—for just a few days a year. The rest of the time the flower is essentially neutral to the bee hive. We need to develop plant and seed mixes that will change that, from the early spring to the time the snow flies or the dearth starts. No one mix is going to work. We will need a diversity of plant materials just like we need a diversity of genetics of bees.
4. What works for annuals, biennials and perennials also applies to the shrubs and trees of the country. When my Kalamazoo neighborhood was developed after World War II, someone had the brilliance to plant a diversity of basswood strains, as well as some tulip popular. This was a post World War II



Star thistle along Interstate 69 in Michigan holds the soil and the pale lavender flowers are attractive to look at. Later the seeds are bird and wildlife food.

development, so it is possible that someone may have understood the role of these plants in helping bees; many different species of bees. Or maybe these were plants nobody wanted to buy and the price was right.

5. The Ohio Turnpike was mowing the sweet clover on a recent trip, while the Indiana and Michigan four-lane roads only had a breakdown strip alongside the highway that was mowed. Maybe it is a cost-cutting effort with the high fuel prices. Maybe the local bird people did a job on ground-nesting species of birds. I am troubled that our state and local

government will pay to mow down beneficial plant species like clover, which are nitrogen fixers. Plus, the growing greenways are also a great place to put extra CO₂ and take up soil moisture during wet years.

Grasses are a damn poor choice for many situations. Yet we grow more lawn grass than anything, and support an enormous industry that feeds, kills weeds, and mows the stuff. And all it wants to do during a drought is dry up, requiring expensive watering using another increasingly limited resource. Well, we will have to get governments to modify their programs to help protect honey bees and other pollinators.

We need to find noninvasive nectar-and pollen-producing plants that benefit honey bees and other pollinators. I am perfectly happy planting species that bloom at night because they support local pollinating moths, AND the bees gather nectar and pollen on cool mornings.

Damn clever, those bees. We will talk a lot about them as I get wound up again.

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