Stahlman Beekeeping Notes For 2022

Early Summer issues

Honey crops and habitat

Issue # 25 June 17, 2022

I have the fortune to be friends with Rick Irwin who has a PhD in chemistry and gives me articles from scientific journals. He sends along anything dealing with bees. He sent me an article out of Science.org that deals with bee thermoregulation and glyphosate research being done on agrochemical negative sub-lethal effects on bees.

He is particularly interested in (Round Up) a glyphosate. I have used it around my bees to control weeds. It is the world's most widely used agrochemical. Rick pointed out this article seems to indicate the glyphosates cause damage to synthase enzymes in the pathway of bees for the synthesis of aromatic amino acids and other secondary metabolites.

What we can see is that insect populations are declining since the introduction of glyphosates and other chemicals from DDT on. Test have shown that neonicotinoid insecticides do effect honey bee navigation, foraging efficiency, thermoregulation and colony growth. And at concentrations far below lethal acute toxicity. The greatest risk to our bees seems to be in pollen collected from contaminated sources. Chemicals may contribute to honeybee losses but there are many other factors involved.

Some of this I mentioned last Friday when I spoke about stress. One person in the audience asked about the environmental effect on pollen. If bees are located near an interstate highway, think about noise pollution, light pollution, diesel fuel and gas emissions in the air not only effecting bees but humans as well. Bees are exposed to all kinds of contamination. I have been told there is no such thing as organic honey – bees flying from hive to field encounter air carried contamination. One can refuse to use chemicals to kill Varroa mites in a hive but that certainly does not prevent other exposure to chemical agents in the air.

The article I read was: June 2022 – Vol.376 Issue 6597 Science Magazine with a web site at science.org. It publishes science reviews of research on almost every field of science.

I am going to share some questions I received last week at the Mecklenburg County VA. bee meeting. (I always enjoy questions I get asked at bee meetings. It helps me understand what issues are important to beekeepers.)

[Ken S -- thanks for this question]

Do bees need minerals? My bees will sit on my arm and lick the sweat!

Answer: I have bees do the same to me. I also notice they collect water from swimming pools and visit barn yard to gather water over going to a fresh supply of water.

Bee Culture's Bee Buzz provided this answer: 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.

[Asbry J asked:]

What are your thoughts on insulating hives in the winter?
Feeding bees – when?
Answer: First, this question for my part is going to be that I do not insulate my hives for winter. I didn't do it in Ohio nor now here in North Carolina. A disease free hive with a strong population of healthy bees forms the winter cluster and keeps it warm. A winter hive needs to be dry with good ventilation. Insulating a hive may have some negative effects -- bees are insulated from warm outside weather when bees could be flying. Wind breaks are in my opinion more valuable. Treating for Varroa mite is one key to keeping bees alive. Food reserves are absolutely required. Thus, feed in spring may be required and feeding in the fall if the bees do not have winter stores. Timing these activities requires the inspection of each hive to determine its needs.

[Johnny M asked:]

When is the honey flow complete?

Answer:

- **One indicator is lack of foraging flights (activity of flying bees slows),**
- **bees bearding outside the hive entrance,**
- **bees retuning to the hive with little pollen on legs and most bees returning show no sign of pollen on legs,**
- **not drawing foundation in honey supers,**
- **robbing is taking place in the bee yard,**
- **bee's become more aggressive.**

When bees are foraging they fill the air and they fly in the direction where they are getting nectar.

[Mary H asked;]

What is your favorite smoker fuel and type of bee?

My favorite is old rotted wood preferably from a down tree that is so rotten that I can with my hands break up chunks of wood. I am fortunate to be around a lot of trees. Rotten limbs and even parts of the tree on the ground supply me with pieces that I put into 5 gal. buckets to dry in my shed. Pine straw is plentiful as well but it burns too fast. Both of these fuels light easily with a few sheets of paper towel placed above the grate in the bottom of the smoker. I then add small pieces of wood to start burning and add fuel as the embers grow producing nice white cool smoke. I think every beekeeper has a favorite fuel!

Type of bee? Gentle and productive. I buy all my queens from Joe Latshaw stock.

[Jessica D asked;]

Can you address the decline in nutritional value of pollen?

I have tried in this article to share some of the concerns scientist have with pollution in our air. Surely the pollen collected by bees could be tested against pollen grains collected in past years. Any air sample will show a certain amount of contamination. Is it enough to affect the pollen bees collect? If anyone reading this can refer me to a study that shows or indicates a valid analysis on pollen used by bees, I would appreciate getting a chance to read it.

[Ann Z asked;]

If queens 'measure' the cells before laying eggs, and lay drone eggs in the larger cells, why doesn't she lay drone eggs in queen cups?

The best answer I can give is found in a book written by H.A. Dade "Anatomy and Dissection of The Honeybee" published by The Bee Research Association, London, UK. To produce both worker bee and queen, the egg of each must be fertilized. Dade says, "The migration of the spermatozoa is most probably brought about by chemotaxis, or automatic response to chemical stimulation, a common biological phenomenon."

His diagram of the queen's egg producing organs show an "S-bend" in the duct of the spermatheca with three sets of muscles which increase the curvature of the bend – decrease it, and compress it; the effect being to draw a small dose of sperm into the 'S', to close the duct above the sperm, and to force the sperm down the duct towards the vagina. "The queen is thus enabled to release small quantities of semen and to pass these to the vagina as each egg passes the opening of the duct, and also to withhold sperm from eggs which are to be deposited in drone cells." What determines fertilization is not certain, he adds.

Your question was interesting because you included [eggs laid by the queen into queen cell cups]. Thus, it could possibly be that the queen has the ability to control the muscles by using her feet to measure a cell size. Can she decide which egg goes into each of the three sizes of cells? I want everyone to know that I am not an expert and do not want this statement to be taken as such. There are things I still must learn!

Final question: What do you see as a possible solution for the loss of bee habitat in places like Raleigh, N.C?

I would like to be optimistic about what we can do about bee habitat. It will take a change in what individual landowners do about land use. At present agricultural land is shrinking year after year. Replacing productive agricultural land with blacktop, well-manicured lawns, and high density housing must somehow be slowed or reversed.

I don't have much hope! I have watched during my life span the honey yields from hives of bees drop. In northern Ohio during the 1950' and 60's a hive could gather 200 pounds of honey easily. There were fields of yellow and white sweet clover as far as the eye could see. The sweet clover has been replaced by fields of corn, soybeans and wheat. I cannot make any statements about North Carolina during that same period.

But it is easy to find statements like this for the 1880's: "In many localities, two or three hundred pounds to the colony is no surprise to the apiarist, while even four or five hundred are not isolated cases." This is a statement made by A.J. Cook, Professor of Entomology at Michigan State Agricultural College in 1881. They didn't have a classification for world records then.

An internet search turned up this: Ormond R. Aebi (February 10, 1916 – July 19, 2004) was an American beekeeper who was reported to have set the world's record for honey obtained from a single hive in one year, 1974, when 404 pounds of honey were harvested, breaking an unofficial 80-year-old record of 303 pounds held by A. I. Root. Together with his father Harry, the Aebi's wrote two books on beekeeping: The Art and Adventure of Beekeeping (1975) and Mastering the Art of Beekeeping (1979) (both currently out-of-print).

What kind of bee habitat is required for a single hive of bees to gather so much honey? It is not where homes have taken over fields, highways have become super highways, and urban sprawl reaches far beyond big city limits. It is not where hogs, chickens, and cows are kept in confined spaces – industrial farming. It is not where forests are harvested for timber and bulldozed to make shopping centers and industrial parks.

Those of us now keeping bees have no idea of how much bee habitat has been destroyed. Starving bees and failure to collect enough honey to survive is more the norm. I saw a post

on a web site – "My hive made me 2 gallons of honey!" That sounds great! Two gallons of honey equals 24 pounds of honey.

It is not the bees – they work hard for every drop of honey they store in their hive. It all boils down to the lack of nectar resources. The solution is to move bees to better habitat!

(From last week's issue on robbing)
Ken Hoover added this to the things that can be done to manage robbing. Another old trick to stop robbing is to use a hose or even a sprinkling can to make it seem like it is raining.