



Illinois State Beekeepers Association Bulletin

May/June 2015 Volume 98 Number 3

Letter from the President

Mike Mason

Hello Beekeepers,

The Illinois State Beekeepers Association continues to grow along with our Affiliates. The current membership is at 1,490. Just five years ago our membership was under 500. A lot of good people stepped up to make adjustments that make this such a great organization. Some of these people have moved on while others are still putting forth great effort to continue identifying ways to improve. Some of these efforts have been at the Affiliate level while others are at the State level. All these efforts, past and current are greatly appreciated and make for a strong organization that can address the challenges we face in beekeeping. So, take advantage of the great website that is constantly updated and our Bulletin that is packed full of current information and educational opportunities. Also look for great speakers at our State meetings as well as those hosted by our Affiliates. These speakers bring the latest in information to help us be successful. Also take advantage of the many classes offered by our membership and their Affiliate Associations. There is a lot going on.

The Summer Meeting is set and will be held on June 27th in Effingham, Illinois. Details can be found on the website's "Summary of Events" page, including registration information, schedule, map and information on the Summer Meeting Bakers Challenge and Jamboree. The information can be found at the

following link along with other events that are going on.

<http://www.ilsba.com/summary-of-events.html>.

Swarm season is upon us. A great opportunity to hive new colonies that can take off fast. I try to use them to replace hives lost by new beekeepers over the winter. Beekeepers are generally good, giving people and I learned from some others that it pays off to help replace colonies lost by new beekeepers with swarms. It's a good practice that has a chain effect which benefits us all.

If you have not already, get your swarm boxes ready and your supers in place. The bees are not going to wait for us so we have to be ready. We are well into the season with colonies reaching their peak. It is May already and I have supers on. I am getting my cut comb boxes ready that will go on with the next strong nectar flow.

I hope you all are prepared and have a successful honey crop.



Illinois Queen Rearing Class in Quincy

A one-day queen rearing workshop will be held **Saturday, June 6th, from 9:00 am to 4:00 pm at the Adams County Farm Bureau, 330 S. 36th St., in Quincy, IL.**

This class provides information and hands on instruction for rearing quality queens. Included is instruction on selecting queen genetics as well as identifying desired traits in bees and how to breed for them. Different methods of queen rearing will be covered including:

Grafting, Cloake board, Cell punch method, Jenter/Nicot system, and the Miller method.

Each participant will take home a grafting tool, cell bar, queen cups and hand-outs. Discussion will include planning and setting up a mating yard.

Participants should have a minimum of two years of beekeeping experience. Recommended reading:

Laidlaw and Paige's "Queen Rearing and Bee Breeding" or "Queen Rearing Essentials" by Larry Connor. Instructors are past IQI director Lonnie Langley and IQI charter member Fred Gerberding.

Cost: \$65 non-members, \$50 for IQI members. To register send a check payable to the Illinois Queen Initiative to:

IQI treasurer

Carolyn Gerberding

1 Vernon Drive Rochester, IL. 62563.

Direct registration questions to Carolyn at cboy8307@aol.com or 217-498-8307.

Questions regarding the class should be directed to Lonnie Langley dlangle41@yahoo.com or Fred Gerberding at cboy8307@aol.com

This is an IQI approved workshop for qualifying as an IQI Producer.

Apiary Day at Iotron Industries

by Eleanor Schumacher

I left for Columbia City, Indiana at 2:30 am, with everything in order: my IDOA Moving Permit, a hot thermos of coffee, and my empty honey supers free of debris, wrapped in double garbage bags and duct tape. Between the coffee and my excitement to experience my first hive irradiation event, I had enough fuel to keep me alert for my 4 1/2 hour drive through the night.

I first found out about Iotron's "Apiary Day" from an email I opened this winter. Aaron Starkey, Sales and Marketing Manager of Iotron Industries was promoting their beekeeper-specific irradiation event, to take place on March 20th, 2015. I was so excited to read about the event, though for me, it was one year too late. Last year, I miserably sacrificed 60 boxes worth of infected comb, not to mention the long nights I stood over a boiling lye-water tank, like a stiff-necked pioneer woman, trying to rid a stubborn strain of European Foulbrood from my comb and woodenware. So, these new possibilities for sterilizing infected equipment definitely peaked my interest.

Hive irradiation has been around for over half a century. The first North American experiments in hive irradiation were conducted in Ottawa, Canada, 1962. A radioactive isotope known as Cobalt 60 used strong gamma rays to destroy the DNA of honey bee pests and pathogens. Several decades later, gamma irradiation has become a popular sterilization option in the chemical, food, and medical industries, and beekeepers on our West and East coasts use it as a viable, affordable option for sterilizing infected equipment and honey stores.

Now, Iotron Industries is personally introducing itself to beekeepers of the Midwest as a provider of a newer form of irradiation technology - electron beam sterilization (e-beam). Iotron has over 15 years experience, having developed their sterilization process in cooperation with the Canadian government. Their method of irradiation is entirely different from gamma irradiation. Rather than using a radioactive isotope, e-beam sterilization uses a linear accelerator (linac). You might remember hearing about Fermilab's particle accelerator in Batavia, Illinois, "Tevatron", which forced protons and antiprotons to travel around a four mile radius at 99.999954% of the speed of light. The linac at Iotron in Columbia City is of a much smaller scale, weighing in at 2.5 tons, in a 54,000 square foot facility, and it uses electrons, which are smaller and lighter than protons. So Iotron's particles are not moving at the speed of light, but can be measured on



that scale. Inside of a heavily shielded copper column, housed in concrete 10 feet thick, electrons are forced to separate from atoms and pulse in a standing wave. Living DNA of potentially infectious microorganisms is destroyed at the atomic level, while the integrity of the physical materials is preserved.

It has taken several decades for engineers to develop particle accelerators that could operate with such a range of power. All the while, infected beekeeping equipment has been one of the many subjects of e-beam studies. In 2004, Iotron's Vancouver facility took part in research that tested e-beam sterilization on beekeeping equipment infected with American Foulbrood and Chalkbrood. This study showed what levels the electron beams needed to be administered to stop the growth of American Foulbrood and Chalkbrood, and render them sterile and incapable of producing further disease.

While I pondered with excitement and anticipation this sci-fi world I was about to encounter as I drove through the night, something invaded my thoughts - a wood roach. The day before, as I was cleaning, packing, wrapping, and taping my equipment per Iotron's instructions, a big red wood roach sprang out from a crevice in one of my telescoping covers. I'm squeamish about cockroaches. The thought of them gives me shivers. Now I wondered, was it wrapped up in the super? Everybody knows that in the event of a nuclear holocaust, the only things left on the planet will be cockroaches, poisoned ivy, and pickled pigs feet. So I wondered - would my hive roach survive the E-beam sterilization?

It was still dark when I got to Columbia City and pulled up the ramp into the Iotron loading bay with my equipment. No sooner than I put my car in park, the bay door opened and Aaron Starkey stepped into my headlights, the reflectors on his safety vest glowing. We shook hands, and in his other hand was an orange safety vest for me. "Safety is our top priority," he said.

I followed Aaron into the clean, massively spacious concrete production warehouse, with its shining floors, and wide, brightly outlined production aisles, which were mostly empty. "By the end of this tour, you'll see these aisles fill up with pallets of product," he said, and he was right. "But first things first," he said, pointing to the door we came in. "This safety door will be our emergency exit. If you see me run for that door, just follow me." He winked and smiled.

"That's just what I'd tell you if you visit my apiary," I told him, "...if you see me running, you run too."

Then began the grand tour of the Iotron facility. We first stepped into the control room, which lived up to my sci-fi imaginings. A blue "Personnel Safety Panel" lit up the wall, denoting the activity of many different sensors and monitors. Two engineers sat at a computer, focused on a stream of data, taking readings from over 1000 sensors.

Outside the control room, the wide pallet aisles were filling up with product. Pallets were stacked tall with bags of animal feed and bedding, other agricultural products, and raw plastics that are used for prosthetics and other medical devices. "Will all of these products receive the same dose of irradiation?" I asked.

"We have a very flexible application," Aaron said, "so we can go anywhere from a very low dose, for example, a food grade dose of 10 to 25 kilogray (kGy), to 1500 kGy, for gemstone coloring, like in the creation of blue topaz.

"Some of these products are in testing mode," he said, "so we can study the proper dose of radiation it takes to sterilize it without degrading the product." By shuffling a series of magnetic films throughout a product, Aaron and his team are able to measure how thoroughly that product is penetrated by the e-beam.

Then it came time to turn on the accelerator. I had wondered what sound electrons traveling at a fourth of the speed of light would make. To my surprise, it sounded like the happy buzzing of a hive with a newly hatched queen. Aaron personally loaded my honey supers on the conveyor belt, and I watched them disappear behind a corner, where they would enter the column. In a moment they re-appeared, not unlike luggage on a carousel at the airport. A technician stepped up to the conveyor belt and flipped each box over, so it could be irradiated from both sides, for full sterilization, and they sent the load through again. Now, at last I understood why each honey super is wrapped and irradiated separately, and why a bottom board or extra equipment shouldn't be stacked inside the double bag with the super. I talked this over with Aaron.

"I had thought of trying to save a few dollars by putting a few extra items in the sealed garbage bags.

Now I understand - the parameters you set for packaging hive materials for irradiation are for the sake of the beekeeper - to assure that the infected equipment is entirely sterilized."

"That's right," he said. "We developed our protocol and dosage standards based on that 2004 Vancouver study, and other studies like it." That published research set the standards on how

deeply the irradiation pulse penetrates combs. So, a beekeeper hoping to save money by placing more materials under the e-beam accelerator than what the studies showed was the limit of materials for a full e-beam penetration risks only partial sterilization of their equipment. Therefore, the help sheet Iotron shares with beekeepers who are preparing their equipment for irradiation is a good rule to follow. If a beekeeper wants to sterilize deep frames full of honey, studies have shown that because honey is so dense, a stack of only 3 full deep frames can be irradiated together and still be sterilized, and this includes flipping the stack of 3 frames, and irradiating from both sides. Likewise, there have been issues with aluminum plated telescoping covers deflecting the sterilization dose. So, beekeepers, if you have deeps, frames full of honey, or other hive components, and you find yourself asking questions after reading their preparation instructions, call and ask before you wrap up your equipment.

At this point, (because I actually had tried to sneak a bottom board in the same package as my super, and had fessed up about it) I felt comfortable enough to tell Aaron about my possible hitch-hiker, that big red wood roach. If roaches survived Chernobyl, could they survive e-beam irradiation?

"I don't believe that cockroaches did survive the Chernobyl blast, but I do know that inside the linac column, the radiation dose we generate is much higher than those radioactive environments. But we have the advantage of being able to switch it off entirely, with no residual radioactivity. There can be no fall out, and there is no waste product. E-beam sterilization has several redundant safety systems built in to prevent accidents," Aaron said. "Standing here, inside our facility, like we are right now, you and I are exposed to



Best Management Practices Guide for Illinois Beekeeping

Pests and Diseases

The ISBA, in collaboration with the Illinois Department of Agriculture Apiary Division, brings you this next section of the "Best Management Practices Guide for Illinois Beekeeping". This section on Pests and Diseases was drafted by a panel of beekeepers who worked together to create, review, and revise this guide of research-based methods of beekeeping. Thanks to the Illinois beekeepers, both anonymous and listed here, for cooperating to create this portion of "Best Management Practices for Illinois":

Ted Bradford, Steve Chard, Terry Combs, Dennis Inboden, Susan Kivikko, Charles Linder, Scott Martin, Steve Petrilli, Arvin Pierce, Eleanor Schumacher, Jim Wellwood, and Dan Wright.

Symptoms of Disease

In the spring, summer, and fall, when inspecting a hive, a beekeeper should look for symptoms of disease.

Start from outside the hive. Are there dead bees on the ground? How many? Dead bees on the ground may point to problems with mites and viruses, Nosema, robbing, or pesticide concerns.

Next, take note when removing the telescoping cover and inner cover. Small hive beetle are often hiding at the top of the hive, chased and guarded by guard bees.

The brood nest itself gives clear indications of problems in the hive. By examining the queen's laying pattern, and how the brood is developing, you may catch in time a brood disease, like European Foulbrood, or a high mite population that is killing larvae as it feeds. A spotty "shotgun" brood pattern gives these symptoms, as well as points out the early stages of queen failure. A poor brood pattern is a good reason to stop, and further investigate the health of the bees.

In adults bees, abnormal behavior such as stumbling, trembling, inability to take flight, spotting in or on the hive, and physical defects of the bees, such as hairlessness, K-wing, and deformed wings are symptoms of disease. In brood, anything other than C-shaped, glistening white larvae at the back of the cell is suspect. Cappings in brood nest should be tannish brown, and convex. Also a healthy bee hive has a pleasant smell. With the exception of a few nectar and pollen sources, such as fall aster and goldenrod, an unpleasant smell may be indicative of a problem.

Symptoms and Treatments for European Foulbrood

Recently, more Illinois beekeepers are experiencing European Foulbrood (EFB) infections in their apiaries. Lab tests sent to the Beltsville Bee Research Laboratory are returning positive results, and in some locations the disease is witnessed to be more aggressive than experienced in years prior.

EFB is a bacterial infection, primarily in the gut of

honey bee larva. The bacteria that we credit as the signifier of this disease is *Melissococcus plutonius*, however, EFB can be present in conjunction with several other forms of bacteria. This creates a disease that can have a host of different symptoms. Displaced, discolored larvae, and a "shotgun" brood pattern, or a frame that has all stages of larva and capped brood, with several empty cells, and no order to the laying pattern, are symptoms of EFB. Other symptoms are twisting, misshapen larvae, dull or discolored larvae, and dried, dead larvae in cells. In some cases, the capped brood can die while pupating. Sometimes a foul smell is associated with EFB. Any beekeeper noticing symptoms like these should call an Illinois Department of Agriculture (IDOA) Apiary Inspector to identify the disease and recommend treatment.

There are a few different approaches for treating EFB. A "shook swarm" technique is gaining popularity as an effort to eliminate the disease. The best time for this procedure is during the honey flow, as the colony has the best opportunity to rebuild its hive in time for winter. In the shook swarm process, the old queen is destroyed, and a new queen in a cage, or a queen cell is placed in clean, sterilized equipment, with sterilized frames and unused foundation. Once the diseased hive has been queenless for 24 hours, the bees may be shaken off of the old frames, into the new equipment with the new queen or queen cell. It is a good idea to do this just before dark, so the bees are less likely to abscond. If shaking bees into a hive and adding a queen cell, after shaking, note where inside the new hive the bees have clustered. Put the queen cell in the center of the cluster. Shook swarms will rarely move their cluster to keep a strange queen cell warm through the night. Placing the queen cell in the cluster gives the growing virgin queen a chance to stay warm and hatch out into the cluster.

When shaking bees, it is extremely helpful to have an empty deep hive body to set on top of the new, clean hive body. The old frame is shaken inside the empty box, jarring the bees loose so that they fall directly onto the tops of the new, clean frames, and crawl into the

new hive body, rather than flying off, and possibly absconding. To help bees settle, recover, and rebuild their hive, continuously feed 1:1 sugar syrup, and pollen substitute, especially at times when there is little forage available.

The aggressive nature of recent EFB infections experienced in some parts of Illinois often calls for antibiotic treatment in tandem with the shook swarm technique to rid EFB from the apiary. Several beekeepers have had good results treating infected hives with Oxytetracycline, the antibiotic in the product "Tetra B Mix". Applying Tetra B Mix as a drench has shown great results in stopping the spread of EFB bacteria. Rather than sprinkle the powdered sugar/Tetra B mixture around the edge of the brood nest, hoping that the bees properly consume and distribute the medicine, follow the instructions on the label for the dosage amount and mix Tetra B into a 50/50 sugar syrup. This medicine can then be applied by sprinkling or drizzling over the top bars and bees in all of the hive bodies. When administered this way as a drench, rather than a powder, the treatment poses no danger to the brood nest, and it is safe to sprinkle this medicine anywhere in the hive, whereas when the treatment is applied in powdered form, the powder can kill larva, and disrupt the queen's laying pattern.

Antibiotic treatments can only be administered when honey supers have been removed. If the honey flow is approaching, a last antibiotic treatment can be administered no less than 6 weeks before the honey supers are put on the hives.

Some beekeepers choose to treat hives solely with antibiotics, forgoing the shook swarm technique, and continue to use the old comb from the EFB infected hive. This management has at times shown less predictable results, and requires consistent monitoring of all hives in the apiary. Symptoms of hives treated in this way can disappear for a year or two, but after a stressful weather event, the symptoms may return. Some beekeepers have experienced the return of an EFB infection more virulent than the original infection. Some Illinois beekeepers have lost entire apiaries in a month's time to a recurrent infection, and have observed the spread of the disease to feral hives and neighboring apiaries. There are several factors that may contribute to these aggressive re-infections. The use of inappropriate antibiotics, such as generic oxytetracycline, not designed for use on honey bees,

has been observed to perpetuate the disease at times, rather than eliminate it. Also, expired or improperly stored antibiotics should not be used to treat EFB for the same reason. It is possible that inappropriate treatment is giving the EFB bacteria a resistance to antibiotic treatment and can cause the beekeeper to receive a financial penalty from the IDOA. Therefore, great care should be taken when confronting this disease in an apiary. Choosing to destroy EFB infected frames and comb entirely is an extreme approach to the problem, however, is an easy approach to eliminating the disease.

An important final consideration in dealing with an EFB is preventing the spread of infection. Hive entrances should be reduced to prevent robbing. Removing EFB dead outs immediately, and either destroying infected comb, or securely storing infected comb will keep healthy colonies from consuming and carrying infected stores back to their hives. Monitor all hives in the EFB infected apiary closely for recurrent infections.

Symptoms and Treatments for Chalkbrood

Chalkbrood is a fungus that infects pupae, and is usually a problem of too much moisture in the hive. Larvae usually die as they begin pupating, right after their cells have been capped. Bees uncap and work to remove white, hard pupae, "mummified" in fungus that eventually darkens with spores. In the cells, Chalkbrood looks similar to pollen, but uniformly white, with a yellow dot or two, looking like eyes. Bees with hygienic behaviors aptly detect Chalkbrood and remove dead brood, leaving a "shotgun" brood pattern, and "mummies" piled up at the entrance or in front of the hive.

Usually, Chalkbrood is easy to reverse. Propping open the inner cover to get more airflow and ventilation will help turn this problem around. Also, make sure the hives are tilting forward slightly so that water can drain out through the entrance. For more severe cases, re-queening has been shown to help. Moving the hive to a sunnier location and replacing badly infected combs and sterilizing the hive might be necessary. If the hive is weak and forage is poor, feed 1:1 sugar syrup and pollen substitute, and reduce entrance to prevent robbing, but maintain ventilation with a reduced upper entrance.

Symptoms and Treatments for Nosema

Trouble flying, spotting on, in and around the hive, and a general decline of the colony can be symptoms of Nosema. *Nosema apis* and *Nosema ceranae* are fungal infections in the mid-gut of the bee.

Nosema apis is sometimes referred to as “bee dysentery”, and can worsen throughout the winter, as bees are forced to cluster in the cold temperatures, without the opportunity to take cleansing flights and leave the hive to eliminate. Signs of *Nosema apis* are dark streaks on the outside of the hive, and dark streaks across the top bars of the frames. The streaks are highly infectious, containing *Nosema* spores. Cleaning the streaked hive components with bleach can help prevent recurrent infection.

Nosema ceranae is a newer strain of *Nosema* that can noticeably weaken colonies during the summer. Recognized signs of *Nosema ceranae* are “K wing,” or a displaced look to the wings, and dead bees on the ground in front of the hive. To confirm that your bees have *Nosema ceranae*, call your IDOA Apiary Inspector to take a sample of bees to send to the Beltsville Bee Lab. A microscopic exam can positively confirm *Nosema*, and a spore count will be conducted.

There is still debate about how helpful and necessary it is to treat an infected hive with Fumagilin, however, studies show that beekeepers who treat at dosages below or above the label instructions can do more damage than good. As with all honey bee treatments, the label instructions must be followed for best results.

Symptoms and Treatments: Viruses

Viruses are recently a growing concern with bees. There is a strong correlation between presence of viruses, and mite loads. Allowing *Varroa* mites to cross a certain population threshold (3 mites per 100 bees) has been linked to hives suffering from weakened immune systems and stress from viruses.

Many viruses cannot be identified by inspecting hives, however, some viruses have visible symptoms. Deformed Wing Virus can be detected visibly by observing withered, disfigured wings on the bodies of young nurse bees. Another visible virus is Parasitic Mite Syndrome (PMS). Symptoms of PMS are shotgun brood pattern and dying larva, much like symptoms of European Foulbrood. If you see these symptoms, call an IDOA Illinois Apiary Inspector to take a sample to help differentiate which disease you

are facing.

Chronic or Acute Bee Paralysis Virus can also have visible symptoms. Commonly seen with this virus is a number of “greasy hairless bees” sitting idly on the top bars of frames, and at the entrance (they have been chased off of comb by healthier bees). These bees look scrawny, with tapered abdomens, and have a “greasy” appearance after losing their hair. Advanced stages of this virus will have sickly looking bees seemingly pouring out of the hive entrance, driven away by the healthier bees. At this stage, sick bees tremble as they walk, with the healthier bees gnawing at their wings, as they drive them from the hive.

The best way to counteract viruses is to knock down the mite loads. Treat by your preferred method to control and reduce the *Varroa* mite population. Then supplement the weakened hive with a frame or two of capped brood from a healthy hive to boost the population. Re-queen with a healthy young queen.

Management of Small Hive Beetles

Small Hive Beetles (SHB) are present in nearly every county in Illinois. Recently, several beekeepers report that strong, healthy hives are falling prey to SHB. However, with good management, SHB can definitely be avoided.

There seem to be some commonalities of strong hives that fall prey to SHB. One common problem is that SHB take advantage of spotty brood patterns. If a hive has a weakening queen, if a hive is hygienically removing brood because of *Varroa* mite, or if a hive has European Foulbrood, the Small Hive Beetle can take advantage of the empty cells. SHB have the ability to puncture into a cell wall and lay several eggs in a cell where a honey bee is pupating. The eggs hatch quickly, producing rapidly growing larva which eat wax, pollen and brood, leaving a slime on the frames and ruining the comb. It has been observed that when the population of beetles reaches a certain threshold, other SHB will come from other hives, and suddenly, thousands of beetles are present, collectively destroying a hive in just a few days.

Management for SHB begins with keeping colonies strong. Do not allow a weaker colony to have more comb than they can successfully guard. Keeping hives in sunny locations, and away from wooded areas can help colonies manage their SHB populations. Applying a ground treatment such as Gardstar, using bottom board traps that hold oil, rock salt, or diatomaceous earth, and using oil traps that fit in between frames are

excellent approaches. Manually smashing visible beetles with a hive tool is also helpful.

Management of Wax Moth

Wax Moth primarily invade weak hives and comb that has not been stored properly. Keeping hives strong and not giving the bees too much comb to guard is usually enough management to keep wax moth from damaging hives.

When boxes of drawn comb are removed for storage, measure 1 cup to 2/3 of a cup of Moth Ice Crystals (paradichlorobenzene, not moth balls, which contain Naphthalene, an unsafe chemical for honey bees) onto a paper plate, or use Paramoth, according to label instruction. Store boxes with moth crystals in a stack, and secure by sealing entrances and cracks. For comb in the early stages of wax moth infestation, freeze the combs for 2 days to kill the moths and eggs that are present, then store properly.

Signs and Management of Predators of Honey Bees

Animal footprints and scratch marks on the hive and ground can indicate skunks, opossums, and raccoons. Unexplained sudden defensiveness is another sign of harassment from mammal predators, birds, or other insects (hornets, yellow jackets, bumblebees, etc.) Elevate hives by at least 12 inches so mammal predators must stand on their rear feet and expose their undersides to get at the entrance, and keep entrance at a guardable size. Installing carpeting tack strips is effective in discouraging mammals from pawing at hive entrances.

Beekeepers may witness spiders, predatory beetles, and dragonflies, however these predators have little influence on hive populations or behavior.

Ants are more of an inconvenience than a threat to strong colonies. Shake them off of inner/outer covers, away from the hive and kill the queen ant if seen.

Symptoms and Abatement of American Foulbrood

American Foulbrood is a spore forming bacteria in the gut of honey bee larvae and pupae. Larvae infected with American Foulbrood typically die just after their

cell is capped, and disintegrate into a thick scale, which contains millions of infective American Foulbrood spores. These spores remain viable for 40 to 50 years. For this reason, and because American Foulbrood is easily spread, the Illinois Bees and Apiaries Act mandates that hives infected with American Foulbrood must be abated per instructions of the Illinois Department of Agriculture.

American Foulbrood begins to show symptoms with a shotgun brood pattern and thin, broken cappings. Further inspection of an infected frame can be conducted with a "rope test". A toothpick is inserted into a sunken or broken capping, and when withdrawn, is connected to the cell contents by a sticky brown rope. This is a fairly reliable indicator of American Foulbrood, however, as with all symptoms of honey bee diseases, an IDOA Apiary Inspector should be notified of the problem, so that a disease sample can be obtained for testing at the Bee Research Lab in Beltsville, MD. Samples that return positive results from Beltsville will indicate that the beekeeper will be required to abate the infected beehive, according to the guidelines set forth by the Illinois Bees and Apiaries Act.

Recognition and Abatement of Africanized Honey Bees

According to the Illinois Bees and Apiaries Act, Africanized honey bees are recognized as an "exotic strain of bees". Overly aggressive honey bees can pose a threat to people and pets, and be a dangerous nuisance to a neighborhood. Honey bees that are too aggressive to manage should be brought to the attention of an IDOA Apiary Inspector. A sample of bees will be collected, and sent to the Carl Hayden Research Lab in Tuscon, AZ. If morphometric measurements demonstrate that the honey bee sample fits the dimensions of Africanized honey bees, the IDOA will require the beekeeper to abate the live bees. However, with any hive that is recognized as dangerous, it is strongly suggested that the beekeeper depopulate the aggressive hive.



Waxing Philosophical ~ the Beekeeping Puzzle

"Season of the Drones ~ a Father's Day Question"

Question: What is the benefit of drone saturation? How do you manage for that?

~ Sharon Hass, Blue Mound, IL

Answer 1: I doubt that there is any place in the State of Illinois that has a problem with drone saturation. As long as I stay in a range of mating dates between the second week in May to the second week in September (in far northern Illinois), there are enough boys in the air to provide the mating services we need. We just don't have any isolated areas where sufficient drones are not available within mating flight distance.

If you are fussy about which drones mate with your virgin queens, the game changes. If I were of such a mind, I would place a colony in each primary compass direction from my mating yard at a distance of one to two miles and use drone comb (starting six weeks before I wish the matings to occur) to increase the number of recruits for service...and therefore make it more likely to have mating with my desired stock -and not the riffraff from the neighborhood. I would need to realize that these drone producing colonies are also going to be varroa producing colonies. If I expected to have the same colonies serve next year, I would need to watch their varroa load carefully.

I suspect that if any Illinoisans thinks of themselves as in an isolated bee mating area, they are fooling themselves.... Maybe happily, but likely fooling themselves.

~ Larry Kregel, Marengo, IL ~ 4 votes

Answer 2: What is drone saturation? How many DCA's are within a 10 mile radius? How many beekeepers are within a 10 mile radius and where did their drone production come from etc. You can't manage for this as a backyard beekeeper.

~ Jerry Hayes, St. Louis, MO ~ 2 votes

Answer 3: Mother nature still knows best. 1st: The larger the drone pool, the mathematically superior is the mating winner. 2nd: Mite control.

~ Chuck Schwend, Marine, IL ~ 2 votes

Answer 4: The under-appreciated drone...absolutely necessary for the continuation of the species, and not much else. Drones interest me for several reasons, one of which is that they only contain half the chromosomes of workers and queens (16 vs 32) while remaining equal respective to species.


I try to maintain beeyards distanced from my mating yard at 1/2 to 1-1/2 miles. I also place a frame of drone foundation in each hive in the yard. If your bees are

hygienic - and most are these days - you will need to do something to knock down the Varroa population, or there will not be many drones from the hives, then the hives will likely crash. Drones do not usually fly more than 1/4 to 1/2 mile from their home hive, so when queens take their mating flight(s) they typically fly past the first drone congregation area, mating at the next closest DCA. Ideally, a mating yard should be in the center of a square, with drone yards on each corner. If you don't have sufficient colonies to populate that many drone yards, the last best option is to place one drone yard about a mile +/- downwind (if your location has a prevailing wind from the south, place the drone yard a mile north of your mating yard). In most cases - especially when mating relatively small numbers of queens - your queen will find a sufficient number of drones to ensure she is well-mated.

If you raise queens, it is necessary to have mature drones when the virgins are flying. If there are live drones in your hives, by the time a virgin emerges from your graft (or from the cell produced by other methods) the drones will most likely be mature enough to mate the queens. It takes 14 days +/- for a drone to become sexually mature after emergence; it will take a minimum of 10 days for your queen cell to emerge, and the virgin will not usually take her mating flight for a day or two. This leaves a gap of two days at the most. This shows the odds to be in your favor for having mature drones if you graft when you see live drones in a colony. To check for maturity in drones, find a drone on a frame of bees and hold it down with your finger; when you let off the pressure on the drone, if it either sits there or slowly crawls away it is not yet mature. If it buzzes when you hold it down, then flies away when released, it is mature.

Interesting drone information: drones do not have stingers, and their mandibles are so small they can barely feed themselves, so they are not a threat to a foreign colony, and are welcomed when they drift. This is one mechanism for the spread of Varroa. I recently made this statement to a group of college students at our farm, and straightway saw a drone being attacked and killed by a guard bee...so much for drone "facts." This is a generally true statement, however. Unfortunately for the poor drone, Murphy's Law trumped general consensus.

In presentations dealing with honeybee anatomy / biology I notice similar attitudes and facial expressions from the audience. When describing the usual day for the drone, I say the drone does not get out early in the morning, foraging for resources as do the workers - who are all female. The drones sleep in, getting up and about around mid-morning for a snack and then to take a stroll to their favorite hangout and check out the queens that may



show up. All the guys have sly grins, while the ladies are scowling and shaking their heads, saying that nature mimics real life. Next I describe the mating process, saying that when the drone actually accomplishes the only real purpose for its existence, its reproductive organs are ripped out of its body and it falls, dying, to the ground. At this, the guys have the grimaces and the ladies have the wry smiles. Then, when the discussion turns to the fate of a drone if it does not mate with a queen and lives until fall, the ladies find it really humorous that the workers drag the drones from the hive to die in the cold. Guys, there is a lesson somewhere in this "drone-saga."

~ Kent Williams, Wingo, KY ~ 4 votes

Answer 5: We cut wax drone comb long ways in thirds and wax glue to top of frame. We like 1 frame for every 2 to 4 hives in our yards of 40 to 100 hives. We also try to pick the better hives or the queens who are raising the brood we like best! The bees will draw the rest of the wax the size they want for the best drones. Beautiful to see them draw it out. We put the frame in the center of 2nd box and that draws the Queen right up into 2nd box. Thin sugar syrup just sticky to the touch is great for drawing comb and raising brood. P. S. From what I understand from the researchers, only 1/3 of drones are even worth mating with. So the more you have maybe better your chances getting Queens mated.

~ Davey Hackenberg, Lewisburg PA ~ 3 votes

Answer 6: Drones are the definition of a sex machine. Their main goal in life is to propagate the species by

mating with a queen on her mating flight. Sounds great until they succeed and die or until the Fall arrives and their sisters kick them out of the hive. They spend most of their day flying in a drone saturation area until sex happens or they are exhausted and head home. Drones are most commonly born on the outside edge of the comb since that is the area attacked by enemies first. If a drought occurs then drone larva is eaten by the workers, they create a loud noise to scare away enemies, they are welcome in any hive and they keep the brood warm.

The benefit of drone saturation is the drones are wanted and needed by the hive. I manage drone saturation by letting the hive do what the hive wants.

~ Jim Truesdale, Wheaton, IL ~ 4 votes

Answer 7: If you live within a 1 to 5 mile radius of other managed colonies or woods or structures with a feral population, you cannot manage drone saturation any more than managing the weather. All these other sources of drones are providing breeding stock for your open mated queens and it depends on how many she mates with as well as the genetics being passed on by the "lucky" drones. From what I understand a queen on her mating flight(s) will mate with from 1 to up to 40 different drones (the average is 12) and she will travel farther from her location than most people think. The available .edu resources indicate 1.5 to 5+ miles

Depending on your local climate, terrain and weather conditions, the Drone Congregation Areas (DCAs) may be anywhere from 30 to 130 feet in altitude.

~ Steve Petrilli, Springfield, IL ~ 5 votes

Apiary Day at Iotron, continued

less radiation than if we were standing outside in the sun," he said, and paused for thought. "But could a cockroach survive? I'm not sure. We should ask Jeff." With that, Aaron dialed up Jeff Blakely, Iotron's General Manager, who was out of town that day. Though Jeff hadn't seen a cockroach come out of the linac, he had seen something similar.

"One time, I found a praying mantis on the floor, near the accelerator output scan horn, preserved. I managed to pick it up, but it disintegrated pretty quickly," he said. "If you had a cockroach hiding in your bee equipment, or a live bee, it wouldn't survive the e-beam sterilization, but it wouldn't disintegrate either. It doesn't take those kinds of high doses to destroy bee pathogens."

I thanked Mr. Blakely and Mr. Starkey for the generosity they showed me with their time, answering my layman's questions, and the fantastic sci-fi experience I enjoyed.

"It's our pleasure," said Aaron. "Safety is a pillar of our business. Besides safety, giving back to the community is another one of our main values. We feel that helping

beekeepers is a great way to care for our community."

Driving home, I thought back on all of those hives I treated for EFB last year, when I boiled 60 boxes of varying sizes, and all of their frames. I remembered the long hours scraping stiff comb into a barrel at night, and trying to keep it secure from scout bees and robbers who didn't know what was better for them, and wanted to carry EFB tainted honey back to their hives.

With a special hive sterilization event just for beekeepers, where the minimum processing fee is waived, or once 100 individually packed items are gathered to send to Iotron in one load, the cost of irradiation is only \$5 per super. E-beam hive sterilization made a lot of sense to me at \$5 per super. It really would have been worth it to bring my infected equipment to Iotron. Had I known last year what I learned at Apiary Day this year, I could have saved immeasurable time and tears in sterilizing my beekeeping operation. I hope I never have to experience a vicious strain of EFB again. But now I have a little peace of mind that I have more reasonable options in dealing with it.

Brood Chamber ~ Bee Frame Box Project ~ By Astrid Sabo



Fathers day is coming soon! Have you thought about what you are going to get that special dad in your life? Well I have just the project for you!

Using left over bee frame pieces, we can make a *bee-utiful* box for your Dad.

All you need is: A glue gun, 4 end pieces from a bee frame kit, fabric of your choice, scissors, a small cardboard box, markers and stickers.

1.) Start by gluing the end pieces together to make a square. To make the pieces fit better, glue the wider end of the pieces together and the narrower to the narrower. You may want to put some extra glue around the joints for better support.

2.) Take apart the cardboard box and put the frame you made on top, trace the sides. Cut just inside the lines that you have traced. Lay out the fabric. You will want the cut-out to be twice as wide as the cardboard plus 3 inches. The height should be as tall as the cardboard plus 6 inches.

3.) Cut out the piece, place the fabric bold pattern side down. Put the cardboard in the middle of the fabric, fold the fabric tight against the cardboard and glue. Glue the flat side of the cardboard/fabric to the frame square.

4.) Now that you are finished, you can add some

special touches of your own. What about drawing some cool designs? Or adding some stickers? Have fun playing around with your choices!



And Happy Fathers Day!



Insert: Summer Meeting JAMBOREE and BAKERS CHALLENGE

"The Baker's Challenge ~ Mid-Morning Snack Buffet"

All attendees are invited to participate in "**The Baker's Challenge.**" It is a beekeepers' tradition in Southern Illinois to create a pot-luck refreshment table with as many homemade items as we can.

We are extending an invitation to all who are attending to participate in the Baker's Challenge. An extra door prize ticket will be awarded to those who bring a dozen muffins, a dozen cookies, a cake or similar item. If you want to further increase your chances of winning a door prize, bake more!

For every batch of a dozen muffins or cookies, you will get another door prize ticket. **Items baked with honey are eligible for the 'Made With Honey' Bakers Competition, which will be judged and awarded at the mid-morning break.**

Evening Picnic/Jamboree

The Evening Picnic and Jamboree will be held onsite following the Summer Meeting. Stay and enjoy live performances from beekeeper-musicians Rog n Bob, and Kent Williams. Enjoy another delicious buffet meal (Fried Chicken & BBQ Pork, sides and drinks included) for \$6 per person.

Do You Need A Hotel Room?

A block of rooms have been reserved at a special rate at the Lexington Inn and Suites in Effingham. They are conveniently located just off of I-57/ I-70. Call soon to reserve a room before all rooms are filled.

We look forward to seeing you at the ISBA Summer Meeting, 2015!

The Buzz About Town

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Long Lane Honey Bee Farm

concludes its series of spring and summer beekeeping classes with these courses:

May 30, 2015 Queen Rearing
June 11, 2015 Basic Beginners
June 12-14, 2015 Bee Institute

14556 N 1020 East Rd in Fairmount, IL in our new Education Center.

You can register by calling us 217-427-2678 or going to our website at www.honeybeesonline.com.

The Illinois Queen Initiative (IQI) is hosting a queen rearing workshop **Saturday, May 30** at the **Jarrett Prairie Center in Byron IL from 9 AM to 4 PM.** Byron is Southwest of Rockford, IL

Location:
Jarrett Prairie Center
7993 River Road
Byron, IL

Cost: \$75 for IQI Members \$90 for Non Members
For more detailed information and how to register for the class visit the IQI website at: <http://www.illinoisqueeninitiative.com/iqi-classes>

July, 9 - 11, 2015 - Heartland Apicultural Society (HAS) Conference

The 2015 HAS Conference will be held at **Albion College, in Albion, Michigan**

Speakers include:
Dennis VanEnglesdorp
Roger Hoopingarner
Joe Traynor
Ken Schramm
Clarence Collison
Kim Flottum
Larry Conner
Renata Borda
Joe Kovaleski
and more

For more detailed information, see the HAS website at: <http://www.heartlandbees.org/>

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**Affiliate Associations:
Publicize your bee events here!**

Contact
Eleanor Schumacher
with your club news at **bubblebubb@gmail.com**.
List news and events on the ISBA website as well by sending the information to the ISBA webmaster,
Steve Petrilli,
s.petrilli@comcast.net.

Please see our Summary of Events page on our ISBA website - even MORE classes are listed there! <http://www.ilsba.com/summary-of-events.html>



Illinois State Beekeepers Association
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Membership in the Illinois State Beekeepers Association is open to all persons interested in bees and beekeeping. Beekeepers are urged to join through their local Associations or individually if no local Associations are available. Dues are \$10 for the calendar year January 1 through December 31 only. Dues include a subscription to this newsletter, the ISBA Bulletin. Beekeeping journals are available to ISBA members at about 25% discount. Mention membership in ISBA when sending your subscription payment to the publishers. Rates are subject to change without prior notice.

Make checks for membership payable to: Illinois State Beekeepers Association and mail to: Illinois State Beekeepers Association, Membership, P.O. Box 21094, Springfield, IL 62708.

Address Changes: Send old and new address six weeks prior to date of change when practical to the Association Secretary. At large members can send the changes to the ISBA Membership Director via email.

Reduced Journal Rates for 2015 (members only)

	<u>1 yr</u>	<u>2 yr</u>	<u>3 yr</u>
<u>American Bee Journal</u>	21.00	39.75	56.25

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