

# Let's Talk Bees

## A busy keeper shares his wisdom

By Margie Lukas

It's a cold spring day when I enter the office of the Adee Honey Farm in Cedar Rapids. Sam Rutten, the manager, gives me a cautious look – he's not wanting any sort of article written that's going to mean the bother of phone calls. He's not selling, he's not buying, he's not advertising: He's busy. But Sam's a good-natured man, and with the record set straight, he lifts a package of cigarettes from the clutter on his desk, pulls smoke into his lungs and settles back to talk bees.

The farm's hives are just returning from the west coast, a semi-trailer load arriving every few days. The bees have spent the winter pollinating almond groves in California and berry farms in Washington. It's a practice common to bee operations across the country – shipping bees during the winter to growers who need pollinators.

Last summer Sam managed more than 5,000 hives, but

with the flooding in South Dakota – another Adee Honey location – he's expecting extra hives to arrive this year, perhaps up to a 1,000 more. This means finding suitable habitat where they will have enough wildflowers for pollen and nectar, as well as an adequate water source. In the past he's traded with farmers, setting his hives in their pastures in exchange for honey. Finding landowners wanting to make the trade was easy. "I knew all the farmers," Sam said, "and they knew me. I just knocked on their doors." Now many farms have been sold to larger operations and the owners generally live offsite. Locating them isn't always possible, and larger tracts of land that were once used for pasture or left idle are now being put into beans and corn – especially corn, to meet the growing demands for ethanol production. Gone are thousands of acres that once held clover and any number of wild blooms.

In the warehouse, dead bees litter the windowsills and empty hive boxes, known as supers, reach to the ceiling. A hive consists of three or four supers, each containing ten frames. The frames are flat plastic sheets outlined in a honeycomb pattern. Bees use the outlines as a base and build up on them with wax secreted from glands on the sides of their bodies. The hexagonal pattern assures no space is wasted within the hive, and the cells are used both to store honey and raise brood. Not yet cleaned for the approaching season, many of the frames are grungy, with sticky dark beads strung along the outer surfaces. It's propolis, a bee glue that begins as resinous substances gathered from trees. Bees chew it, mix it with their saliva and use the compound to strengthen their hives, sealing them against wind, cold, rain and insect invaders. It's believed propolis even helps to ward off diseases.

A queen separator – a screen too narrow for the large queen bee to pass through – is placed between the lower and upper supers to keep her from entering the top ones. Her confinement in the lower boxes insures the top ones contain only honey, which can then be extracted without destroying the brood. Over the summer a healthy hive will fill each of these upper supers with as much as 70 pounds of honey, which is why Sam says, "All beekeepers have bad backs." Given the number of hives he harvests, his lumbar concerns are easy to understand.

Before we leave for the yard where his bees are being unloaded, Sam introduces me to his "pets" living in the alley behind the shop – a hive he's rescued from under the eaves of a grade school in Bartlett. The principal, concerned for



PHOTO BY DOUG CARROLL

During a worker bee's short life, it will visit nearly a 1,000 flowers and produce only about 1/2 of a teaspoon of honey.



PHOTO BY JEFF KURRUS

The bees are sluggish in the cool air, allowing Sam Rutten to look for a queen without the need of a veil.



Supers, or hive boxes, reach to the ceiling in the warehouse, waiting for the return of the hives and a new season.

PHOTO BY JEFF KURRUS

students' safety under the threat of the growing swarm, called him for help. He climbed a ladder, found the queen and brought the hive back with him. Moving a hive is relatively simple – once a queen has been moved into a new box, the majority of the colony will follow her scent into the new container.

It's a short half-mile drive out of town to where the trucks are arriving

and being unloaded. Long lines of hives stretch down the lot like garden rows, each shipment kept separate from the next until they've been counted and tended to. The top is pried off each hive so it can be checked for healthiness and food supply. Of the truckloads returned so far, only 17 hives are dead – a low number; most years the losses are higher. Because the bees have just endured the stress of the trip and the

fields are not yet in bloom, any hive without an adequate honey supply to get them through the lean weeks ahead will be fed syrup. Only then will they be loaded onto Sam's smaller truck and taken to working locations. Throughout the summer he'll check each hive every couple of weeks. With so many hives and the difficulty of finding adequate sites, the bees will be scattered over a 50-mile radius. "And for the record," Sam quips, "gas prices are killing me."

To open a hive and disturb it enough to show a queen, Sam fills a smoker with grass he's collected from ditches after the county has mowed. He's fond of work that has him outside on summer days, and he enjoys honey he's "jarred up," but his affection for the bees goes deeper: "Bees are like other animals – you treat them good, and they'll be good to you." He's even suspicious of beekeepers needing full-body suits. He thinks that could be a tip-off that the bees they're working aren't being treated with respect. "You don't respect the bees," he said, "you'll make them mean." Which is one reason he's shaved the full beard he wears from fall to early spring and trimmed eyebrows that during the winter challenge those of the retired *60 Minutes* commentator Andy Rooney.



Rutten uses smoke to quiet the guard bees at the bottom before opening the hive.

PHOTO BY JEFF KURRUS

Bees don't like gnarly hair because they get their feet caught in it. Sam grins, "Might be hair reminds them of bears." They also don't like dark colors, which is why beekeepers wear light-colored clothing.

With the smoker lit, and neither of us even wearing veils, Sam gives the guard bees at the front of a hive a few ineffectual-looking puffs of smoke and pries the top off with his crowbar. A multitude of boiling bodies show themselves, and a thin ribbon of color lifts into the air around us. With a shiver I ask about killer bees, but he assures me they don't survive this far north. A few can invade a hive now and then, but that meanness – given the short life of bees – is quickly bred away.

With the day's cooler temperature, the bees are sluggish and Sam's confidence is infectious. A half dozen buzz around our hands and one lands on his face, but soon those inquisitive few lift away.

The queen is the mother of all bees in the hive and because of her long body is easy to spot amongst the smaller, stubbier worker bees. When the hive finds her failing, it breeds another. The evidence of a waning reign is something even beekeepers can see: the occurrence of a disproportionate number of large drone cells – cells that contain an unfertilized egg that will hatch into a male bee.

When a queen is failing, a few select larva are fed throughout their larval stage on royal jelly – a concentrated substance of B vitamins and amino acids. In contrast, future worker bees are fed bee bread, a mixture of pollen, honey and digestive enzymes. Royal jelly stimulates the ovaries, but there will be only one surviving queen – the first to hatch searches for other queen cells, tears open a corner of each protective wax covering, and kills her rivals. The old and failing queen is often exterminated through a process known as "balling," in which worker bees cover her until she overheats and dies.

A healthy queen lays up to 2,000 eggs a day, and the length of her life can vary. In some places it's believed a



PHOTO BY DOUG CARROLL

Bees build cells for producing brood and storing honey on commercial foundations.

queen can live up to six years; Sam believes his queens in Nebraska have a reign of about three years. Worker bees quickly wear out their wings and die within three to six weeks, thus the need for a constant brood to maintain the 60,000 to 80,000 bees in a typical hive.

Of that number, drones make up a very small percentage of the total population. They do no work and do not even possess stingers to help defend the hive. Their sole purpose is to mate with a queen on her maiden flight, after which she stores the sperm in her body and uses it to fertilize her eggs. Needed only in the spring and summer, when food sources become a concern in the fall, drones are refused entrance to the hive and without a food supply soon die.

Worker bees do just that: work. During the course of their short lives, they produce only 1/2 of a teaspoon of honey and will visit a thousand flowers to do so. Pollen is collected on their stiff hairs when they brush against a flower's anthers and is combed into pouches on their hind legs. Nectar is extracted through their long, tube-like tongues and stored in their stomachs. Once back in the hive, the nectar is regurgitated. The process removes much of the water. When the water content has been further reduced to about 17 percent through "fanning" – air movement created by the worker

bees beating their wings – the cell is capped. Capped honey can last indefinitely.

Sam slides the frame he removed back into the warm super. He's shown me his operation and he's busy, but no visit to an apiarist would be complete without asking about CCD: Colony Collapse Disorder. The term refers to the sudden death of a hive, often its complete disappearance, with no clues left as to the fate of the bees. Scientists now believe there isn't just one cause, which unfortunately means there isn't just one solution: Poisons, fungicides on orchard crops, mites, loss of habitat – including CRP land with regulations that called for the spraying of thistles – are all believed to be part of the problem.

But Sam is hopeful – new CRP regulations encourage landowners to seed plants that favor not only honeybees, but bumblebees and butterflies as well. The search for better pesticides, ways to educate the public, and other solutions are global.

All of which helps assure Sam that he'll be tending bees far into the future. ■

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