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Bee Culture

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Bee Culture

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Foretelling a better year, Dave Myhre of Port Ludlow, Washington caught this rainbow arching over his beeyard.

FEATURES

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DEPARTMENTS & COLUMNS

Comments
Suggestions
Criticisms
Kudos, and
anything else

AHB in Pennsylvania?

When I first started keeping bees Africanized Bees were still below Mexico. The obvious question then was "can they arrive and become established here in Pennsylvania?" The answer was, "based on their southern migration in South America they probably would not become established above the 35°N Latitude, or somewhere in North Carolina." I think there is good evidence to support that in South America the range may increase somewhat further south in prolonged mild weather but is usually corrected during normal cold spells.

The above does not take into account queens and packages being shipped north or the annual migration of colonies for pollination. It has been noted that closing a border to a certain state would only hurt beekeepers in that state. I totally agree with that statement. This cannot be looked at according to political boundaries. Using good science, something overlooked often when dollars are in the mix, I think a map can be drawn showing the predicted future expansion according to conditions necessary to support a sustainable population. That map should then be compared to one that shows the current expansion. The current map becomes the "Hot Zone." States on the future map, not within the hot zone but capable of sustaining the population, become the "Warm Zone." The rest of the country is the "Cold Zone." Control efforts could then be tailored to each area. Surely there would be no initial value in setting traps in upstate NY or New England, but it could be of great value in SC or GA.

There are a number of possibilities but I am sure the naysayers will quickly point out how they won't work. Northern beekeepers (e.g. Kirk Webster, Michael Palmer) have shown that the north does not have to be dependent on the south to stay in business. As Michael has often said, you just have to change the way you do things.

If we would have taken the same approach with *Varroa* 15+ years ago where would we be today? We were told, "It can't be stopped so just buy your strips and shut up and don't get in the way of anyone really trying to make a living with bees." That is now water under the bridge. But other than the way AHB can and will be spread, it cannot be compared to mites, hive beetle, foulbrood or any other beekeeping problem.

In the Mid Atlantic region the current plan is one of defeat. It assumes we can't keep them out so let's plan on how we deal with them. In most of the U.S. it is legal to own a pit bull terrier. But just try to put one or two in a yard next to a day care center. Most parents would not want their children exposed and would fight the dog owner or take their children to another center. The dogs could be completely harmless, but it won't matter. They are perceived as a dangerous breed.

In my part of the state people are encroaching on agriculture. It is not like out west or in Texas where there may be miles between individuals. My bees must be able to coexist with humans. There is no alternative, and all the education we try to do will go up in smoke after the first serious stinging incident hits the news.

I have spent most of my career in product safety and risk assessment. There is only one truth. **PERCEPTION IS REALITY**. It doesn't matter who is right or what the facts are. If someone thinks they will be hurt by something they will fear it and work to remove it. I guarantee that if we allow the spread of AHB many folks reading this will not be keeping bees in the future. Possibly a few will wish they never had.

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Liability insurance is available today, but I would suspect most noncommercial beekeepers don't carry it. The current insurance is based on a minimum price with some increase in premium for a large number of colonies. The base price is what usually discourages someone with only a few colonies. In the future it will be more risk based, just like automotive insurance. Everyone will pay a lot and the more colonies you have the more you will pay. All we need is a few good lawsuits to get the insurance companies attention. It is a given that agriculture cannot function without bees. However, peanuts could replace almonds really quickly if almonds cost $50 a pound.

No one is at fault here. There are no good or bad guys in this situation. This is a serious threat and we have to work together to get through it. We have to learn the facts and deal with this in a manner that is beneficial to the entire industry.

Ron Bogansky
Kutztown, PA

Fake Honey

I haven't noticed this in the magazine before, so I would like to mention this to others what there is on the market now.

I was at Walgreen's and happened to go by the food section. I noticed two rows of honey bears. Upon closer examination one row was labeled imitation honey. The shelf tag showed that both were $2.89, but the imitation was on sale for $2.50. Being curious as to the ingredients, here is what I found – Maltitol which is a sugar substitute; Acesulfame K which is an artificial sweetener (there are indications that it might be a carcinogenic) and Malic acid which is a colorless, highly water-soluble, crystalline substance, C4 H6 O5, having a pleasant sour

taste and found in apples, grapes and rhubarb.

You can find information on these on the internet.

Harold Cary
Mason City, LA

Two Queens

On page 19 of the November *Bee Culture* is a picture of a brood comb included merely as an example of brood. It was my article, *Does This Smell Bad*, and I sent the picture without checking it. If all you sharp-eyed beekeepers want a test, find the queen in that picture. Once you've found her don't stop looking as you usually do. Look a little further and you'll find her friend, the other queen. One is black and the other golden. That makes me think they are not related. When I spotted them in my observation hive I thought I was dreaming. They coexisted for a month or so quite peacefully. The colony was one that wintered over but never took off in the Spring. It continued to dwindle and I never knew why, so it wasn't a normal hive. I'm told that 20% of colonies have two queens at one time. I've seen it before.

Dick Marron
Danbury, CT

INNER COVER

On this page are some graphics – a *Dennis the Menace* cartoon, and photos of a couple of unique honey containers. I almost never put graphics in this column, so this is something special.

Look carefully at the cartoon (We purchased one time use rights from North American Syndicates to show you this). All of the disadvantages of the queenline jar (yes, that's a queenline jar) are obvious here, so elegantly shown by this typical child. What an absolute, nationally-distributed insult to our packaging this image is. I can imagine parents all across the land recalling a similar incident in their recent past, with even the more careful and polite child, let alone a precocious five-year-old like Dennis. Imagine, too, another scene – honey being scratched off this week's shopping list as experienced mothers don't want a repeat, and new parents don't want to even try this marathon cleaning event.

©NAS. North American Syndicate

Don't you agree – it's time to get rid of this horrible container? It is difficult to use if you're an ept adult. Children don't stand a chance. In fact there is no good, easy way to use this container without a drip, a drop, a spill, a mess, an unhappy customer.

Take a look at containers of similar materials in the grocery story – catsup, mustard, jelly, jam, salad dressings . . . the list goes on and on. They have it figured out. Squeezable plastic, no-drip spouts, secure caps, exciting labels, child-friendly containers. Easy application with little (or no) chance of that errant drip to aggravate a customer, again.

The two containers in the photos have it figured out exactly. The labeled container isn't for sale I'm told, but the other, picked up at Apimondia is sold in Europe, and could, I imagine, be used here. Interestingly, I noted many honey packers from the U.S. were there, but the number of beekeepers was almost non-existent. Perhaps one of our packers will be using this jar soon. I also understand there's a company in Chicago that has a similar container and lid. The Honey Board knows, I'm told.

The unique feature of the containers below is that curious opening. When squeezed it opens a flexible nipple-like device and the honey emerges. When pressure is released, the nipple immediately closes, sealing the opening, leaving not so much as a single drop to mess up a small child, your fingers, or your customer's lives.

Note, too, that both of these containers have a broad, flat surface to apply a large, instructive and compelling label. And labels, you know, are what make that final, impulsive purchase go through. A label that screams – **PURE LOCAL** (name your variety here) **HONEY. No Drips, No Drops, No Spills, No Problems. Product of The U.S.A.** All this in Big Letters. (I'm always surprised that more labels don't promote that fact. We hear much wailing and gnashing of teeth about imported honey, but given the chance, we seldom claim the obvious.)

Further, both of these containers, like the catsup bottle in my 'fridge sit on the lid so the honey is always immediately available, no matter how nearly-empty the bottle is, or how cold your kitchen on January mornings.

I don't need to say it again I suppose, but I will anyway. Isn't it time to quit using the least useful, most inconvenient, messy, sticky containers we can find? You bet it is.

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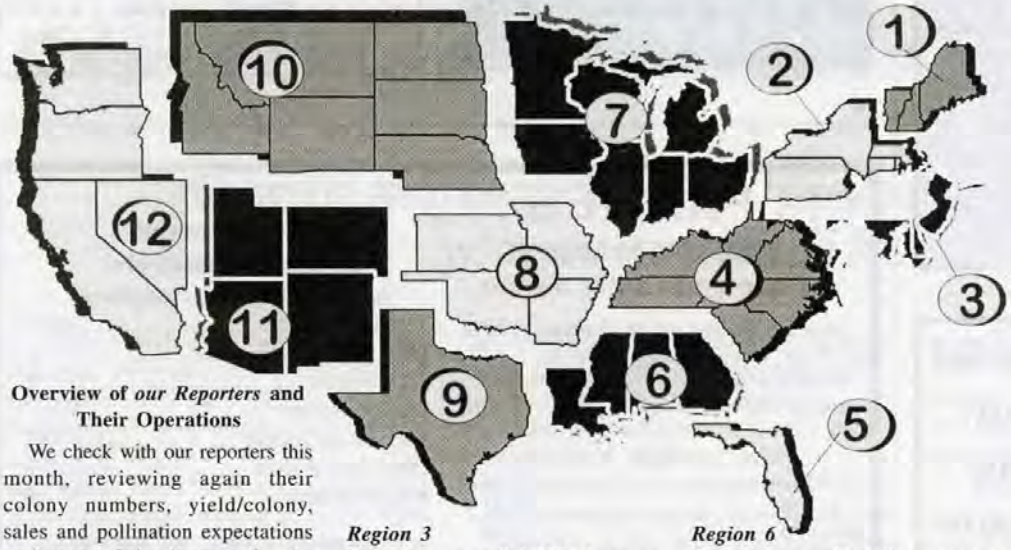
How many times have you been asked

Continued on Page 46

News You Can Use

JANUARY – REGIONAL HONEY PRICE REPORT



Overview of *our Reporters* and Their Operations

We check with our reporters this month, reviewing again their colony numbers, yield/colony, sales and pollination expectations and crops. Sales increased – 1= Better than expected; 2 = Normal; 3 = Slow.

Region 1
Number of colonies range from 10-100, average yield was only 37 lbs., sales at a slow 2.3, 60% pollinate, nobody uses contracts. Strawberries, pumpkins, blueberries, apples.

Region 2
Colonies 20-700, yield 27 lbs., sales normal at 2.0, 40% pollinate, no contracts. Apples, sweet cherries, pears, strawberries, pumpkins.

Region 3
Colonies range 8-3,500. Average yields is 30 lbs., sales slow at 2.5, half pollinate with no contracts. Almonds, apples and watermelon.

Region 4
Colony counts range 4-430. Average yield 39 lbs., sales normal, 29% pollinate – half with, half without contracts. Clover, cotton, apples and pumpkins.

Region 5
Colony range 21-300. 63 lbs. average yield. Sales normal. Half pollinate, with no contracts. Citrus main crop, vegetables.

Region 6
Colony range 25-750, averaging 48 lbs/colony. Sales good at 1.7. Half pollinate, and half of them use contracts. Blackberries, mayhaws, orange, peach, blueberries.

Region 7
Colonies range 10-750, with a 76 lb. average. Sales OK at 1.8. Half pollinate, with 75% of them not using contracts. Apples, pumpkins, vegetables, cranberries, clover, pumpkins, almonds, cukes and melons.

Region 8
Colony range 75-260. Average yield 63 lbs. Sales at 2.3. A third pollinate, all without contracts. Apples and pumpkins primary crop.

Region 9
Colonies range from 30-350. Average yield is 96 lbs. Sales OK at 1.8. 60% pollinate, and two thirds use a contract. Almonds, watermelon and apples.

Region 10
Colonies range from 5-350. 58 lbs. average yield. Sales good at 1.4. 20% pollinate almonds, all use a contract.

Region 11
Colonies range 12-120, with average yield 45 lbs. Sales OK at 1.8. No reporters pollinate.

Region 12
Reporters here run lots of bees – ranging from 150-3,000 colonies. Average yield only 45 lbs. however. Sales OK at 1.8. All pollinate, two thirds use a contract. Almonds, pears, clover, cherries, apples, oranges, avocados, meadow foam and vegetable seed.

	Reporting Regions												Summary		History	
	1	2	3	4	5	6	7	8	9	10	11	12			Last	Last
Extracted honey sold bulk to Packers or Processors													**Range**	**Avg.**	**Month**	**Yr.**
Wholesale Bulk																
55 gal. Light	0.95	0.95	0.95	1.09	0.83	0.93	0.99	0.90	0.95	0.85	0.96	1.07	0.83-1.09	0.95	0.89	1.18
55 gal. Amber	0.90	0.85	0.88	0.90	0.68	0.80	0.82	0.90	0.71	0.70	0.94	0.94	0.68-0.94	0.83	0.81	1.06
60# Light (retail)	95.00	111.20	99.88	94.73	62.00	117.50	89.00	106.93	120.00	115.00	129.00	96.67	62.00-129.00	103.08	103.86	115.83
60# Amber (retail)	95.00	107.87	98.37	95.44	57.00	100.00	81.29	105.00	122.50	98.37	119.00	87.00	57.00-122.50	97.24	100.02	107.31
Wholesale - Case Lots																
1/2# 24's	37.78	50.38	58.16	59.15	58.16	32.50	39.33	58.16	58.16	35.76	32.00	42.48	32.00-59.15	46.83	44.05	37.47
1# 24's	51.04	62.28	62.58	51.60	51.36	49.00	60.64	70.80	50.40	75.00	74.90	70.40	49.00-75.00	60.83	62.43	57.92
2# 12's	65.58	61.72	58.67	55.25	44.40	52.00	55.02	58.75	46.50	57.84	46.50	60.96	44.40-65.58	55.27	55.61	50.11
12 oz. Plas. 24's	51.84	57.78	56.72	65.28	39.95	38.00	48.18	53.60	51.60	47.64	62.73	55.44	38.00-65.28	52.40	51.94	49.57
5# 6's	53.03	65.15	64.33	55.00	64.33	66.00	59.77	64.33	59.00	59.43	58.00	65.25	53.03-66.00	61.13	61.09	59.73
Quarts 12's	40.50	100.35	82.57	77.63	66.00	79.75	82.86	78.60	78.00	89.50	81.70	88.38	40.50-100.35	78.82	82.86	79.52
Pints 12's	38.95	49.95	53.38	55.50	35.40	48.25	50.07	44.76	48.00	49.50	50.00	53.94	35.40-55.50	48.14	51.76	47.81
Retail Honey Prices																
1/2#	2.55	2.68	2.75	3.00	2.15	3.25	2.52	2.75	2.75	2.61	3.25	2.52	2.15-3.25	2.73	2.51	2.48
12 oz. Plastic	2.75	3.07	2.85	3.36	2.89	3.25	2.85	3.29	3.17	3.08	3.32	3.28	2.75-3.36	3.10	3.26	3.14
1 lb. Glass	3.95	3.53	3.50	4.11	3.41	3.80	3.52	3.91	4.00	3.86	4.25	4.20	3.41-4.25	3.84	3.94	3.75
2 lb. Glass	7.25	6.46	6.50	5.95	6.59	6.99	6.04	7.25	6.32	6.71	5.85	7.21	5.85-7.25	6.59	6.62	6.26
Pint	6.15	6.88	5.97	6.06	5.97	5.25	5.71	5.65	5.00	6.42	5.00	6.29	5.00-6.88	5.86	6.08	5.78
Quart	12.00	8.55	10.26	8.38	7.92	8.83	8.27	8.43	8.83	12.50	7.95	7.99	7.92-12.50	9.16	9.06	8.77
5 lb. Glass	12.51	13.51	15.00	12.46	12.70	14.00	12.77	12.70	15.00	13.36	13.11	12.99	12.46-15.00	13.34	14.61	13.58
1# Cream	4.13	5.16	6.76	6.27	6.76	4.65	4.86	4.92	5.75	4.84	5.50	4.23	4.13-6.76	5.32	4.89	4.59
1# Comb	4.38	4.54	6.57	5.15	6.57	4.50	5.98	4.80	6.00	5.50	6.50	5.80	4.38-6.57	5.52	5.75	4.94
Ross Round	5.01	3.90	5.01	5.68	5.01	3.25	5.43	5.00	5.01	5.63	5.00	4.99	3.25-5.68	4.91	5.31	4.92
Wax (Light)	2.15	2.25	1.75	2.45	1.42	2.00	2.50	2.50	2.56	2.50	1.87	2.47	1.42-2.56	2.20	2.19	1.32
Wax (Dark)	1.95	1.82	1.50	2.17	1.22	1.65	1.25	2.00	1.75	2.00	1.70	2.25	1.22-2.25	1.77	1.68	1.21
Poll. Fee/Col.	50.00	56.33	40.00	36.00	40.00	67.50	45.43	60.00	45.50	79.24	100.00	140.00	36.00-140.00	63.33	52.56	47.97

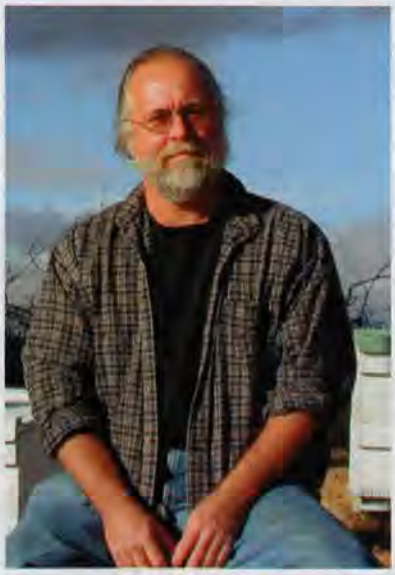
RESEARCH REVIEWED

Explaining • Defining • Using

Steve Sheppard

"Selection and possibilities within honey bees – be careful what you are selecting for."

The issue of honey bee breeding and selection has been around for some time. In 1929, a Russian honey bee scientist visiting the U.S., Dr. Alpatov, noted that Italian honey bees bred and sold in the U.S. were more yellow in color than populations he had studied across Italy. He attributed the color difference to U.S. queen producers who actively selected for this trait. The tendency of U.S. breeders to produce and sell a brighter queen is perhaps understandable, given that such a "product" could be more easily differentiated from the dark bee commonly used by beekeepers prior to that time.



With the importation and establishment of parasitic mites in recent years, higher hurdles have been placed before queen breeders than the need to select for color. Most notably, the hurdle to select and breed honey bees that can better tolerate or resist damage from parasitic mites, especially *Varroa destructor*. A clear understanding of the nature of honey bee resistance to mites is important and one published study involved "bi-directional" selection and breeding experiments conducted with Italian honey bees (Lodesani et al. 2002).

The team of Italian and German researchers selected lines of bees that tended to have either high or low mite populations and then investigated whether behavioral and physiological characteristics of bees from these different lineages could be correlated to mite levels.

The researchers initially measured the *V. destructor* levels in a population of 60 colonies of honey bees for two years. In the third year – the five most mite-infested and five least mite-infested colonies were selected and daughter queens for the first generation (F1) were produced by instrumental insemination of virgins from each group with semen from within-group drones.

Twenty-nine colonies were established using the selected queens and equalized for brood and honey and then placed in an isolated location.

In the fourth year, these F1 colonies were infested equally with mite-infested bees. During the rest of the bee season, colonies were monitored for mite levels, brood area and honey yield and also tested for a number of behavioral or physiological characteristics. These characteristics included hygienic behavior (ability of bees to clean out a small comb section of pin-killed pupae), rate of non-reproducing mites (proportion of single foundress mites that did not reproduce) and grooming behavior (proportion of damaged/undamaged mites that were collected on sticky boards). Based on the mite level results, another generation of bees (F2) representing "susceptible" and "resistant" lines was produced using instrumental insemination and the above tests were repeated using 24 colonies in year six.

The results reported by the researchers showed that mite resistance or tolerance as measured solely by mite population levels was not readily correlated with the various tested physiological and behavioral honey bee characteristics. Thus, there was no correlation between the tendency of the bees to remove pin-killed brood and the mite infestation levels of the colonies. Likewise, they found no correlation between the number of non-reproducing mites and the level of mite infestation or between the percentage of damaged mites collected on sticky boards and the level of mite infestation.

However, they *did* find that both brood area (number of brood cells) and the average honey crop harvested were higher in each year of the experiment in the so-called *susceptible* colonies compared to the *resistant* colonies!

To understand why, we might consider that higher brood areas likely corresponded to higher overall bee populations and thus, higher honey yields, albeit at the expense of maintaining higher mite levels. In their discussion of the results, the authors caution the reader that hygienic behavior, non-reproduction of mites and grooming may be traits that have limited value in a selection program designed to produce mite resistant honey bees. They further caution that it may be difficult to select for honey bees that produce both vigorous and productive colonies, yet have slow growing mite populations. Their rationale for the latter statement is that mite

population growth appears to be tied to brood levels. Thus, selection for low mite levels could actually select for bees that produce smaller amounts of brood. In fact, this particular point made by the authors in reference to a broad problem in selection may hold the key to why the specific susceptible and resistant lines developed in their experiments exhibited no correlation between the aforementioned traits (hygienic behavior, non-reproduction of mites and grooming) and mite levels. For example, by using (as they did) mite infestation level as the only selective criterion, the researchers may have inadvertently selected for high and low brood producing lines of bees. Thus, their "resistant" bees actually may have been bees selected to produce less brood and to be less able to sustain mite population growth. Consequently, they also would have been less able to collect a surplus of honey.

Among researchers and breeders interested to produce honey bees that are resistant to *Varroa* mites, there may be continued debate on the relative importance of specific traits such as hygienic behavior, non-reproduction of mites and grooming within the selection scheme. However, what is discussed in the last paragraph of this paper, in numerous other recent papers on honey bee breeding and what must be considered to be "just good common sense" by most bee breeders is the need to include additional traits relevant to apiculture in any selection program. The ability of the colony to exhibit desirable rates of population growth, to produce adequate honey surpluses, to overwinter well and to resist diseases are just a few of the other traits that must be considered and included in the selection regime. BC

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Lodesani, M., K. Crailsheim and R.F.A. Moritz. *Effect of some characters on the population growth of mite* Varroa jacobsoni *in* Apis mellifera *L. colonies and results of a bi-directional selection.* 2002. Journal of Applied Entomology 126:130-137.

Malcolm T. Sanford

The State Of Bee Science

"Theodore Sturgeon, an American science-fiction writer, once observed that '95% of everthing is crap.' John Ioannidis, a Greek epidemiologist, would not go that far. His benchmark is 50%."

I have just returned from the 41st Reunión Nacional de Investigación Pecuaria in Cuernavaca, México. It was jointly sponsored by several entities, including the Universidad Autónoma del Estado De Morelos and the Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias. Both organizations have a long history of collaborating in animal research. A wide range of scientific papers was presented over four days on the management of beef and dairy cattle, goats, sheep, pigs and honey bees. As I wandered the halls attending the talks and perusing the posters, I wondered where would animal producers be if there had been no organized scientific study over the last four decades?

To a person with my training the answer is obvious, but for some of the producers it seemed that all the scientific study simply provided more questions than answers. I wrote an article on how bee science is often viewed by researchers and beekeepers in the March 1998 *Apis*,[1] a newsletter that I authored during my tenure at the University of Florida, and still can be accessed on the World Wide Web:

"A panel on bee research was convened at the recent meeting of the American Beekeeping Federation. Billed as what bee researchers want from beekeepers and vice versa, presentations from both sides showed that a substantial divide exists between these groups. Researchers are primarily driven by the demands of their discipline and administrators. The latter often require that scientists themselves acquire the substantial funding to carry out their activities from granting or commercial sources. As for the former, researchers are called on to publish in journals that are peer-reviewed and read by others in their field. They get little if any credit for publishing in lay magazines. The practical result of this is that a lot of research is not perceived as directly helping beekeepers. In addition, much of it continues to be published in places not readily accessible to the lay public.

"Many beekeepers see scientists as employed to solve applied problems and publish the results in accessible trade journals. They often have little patience for research published in scientific journals, especially that which they perceive has little practical value. A good many researchers, on the other hand, see beekeepers as supplying little, if any, funding. As a consequence, they have little patience for what they often view as complaints by a cadre of folks who are not informed about what really is involved in bee research.

Unfortunately, this conflict sometimes leads to beekeepers becoming fed up with researchers, and vice versa. In the worst-case scenario beekeepers may accuse researchers of complacency, even complicity, in ignoring their needs. At the same time scientists can lose respect for beekeepers, who they perceive as ungrateful for research even when it does directly affect their livelihood.

"At the convention, several conclusions were reached. Quality research isn't easy. It takes patience, time, money and adequate controls. In 1985, I wrote an essay in these pages (May 1985) about the latter issue with reference to tracheal mite studies. It part it read, '...no experiment is worth much without a control, an untreated colony in the exact same state genetically, qualitatively (same stores, amount of brood) and infested to the same degree as the colony being treated. This provides the basis for comparison to show a material's effectiveness. In bee research, developing effective control colonies is often the most difficult part of an experiment. This is because to be shown to be generally effective, experiments must usually be conducted on a large scale involving a great number of both infested and control colonies.'"[2]

This brings to mind a recent flap that has mostly escaped the readers of *Bee Culture* who are not part of the enlarged online beekeeping community that routinely uses electronic communications. In my electronic *Apis Newsletter* at the Yahoo.com site, I wrote the following about the September 2005 edition of *Bee Culture*:

"Hans-Otto Johnsen discusses commercial beekeeping in Norway. He describes *Varroa* control in the country employing artificial swarms and splits, breeding and biotechnical methods. Much of the article discusses an experiment in small-cell beekeeping. Discussion of this on the bee-l list revealed a distinct difference between how those who read *Bee Culture's* pages deal with the information presented. Even though several have complained about the methods used, others seemed to care more that the information was published so they themselves could determine what others are doing and do the due diligence on the study's validity themselves." [3]

Indeed publication of this study also printed in *The Beekeepers Quarterly*, a British magazine, resulted in several strong responses. Some

"Another problem many in bee research can relate to is small sample size. The greater number of colonies to which experimental treatments are applied, the better will be the resulting information. However, the more colonies one includes in a study the more difficult and expensive it becomes."

in the bee-l community saw the article as vindicating arguments that small cell size should be further investigated as a means to control *Varroa* and other bee maladies. When I inquired further about this article from some of those who collaborated on the project, I received the following: "Illegal publication of test results!...It is important for the Norwegian Beekeepers Association to point out that the test is not finished, that the results in the mentioned articles (sic) is taken out of a larger context, and that Johnsen has published some of the preliminary results without the approval of the Norwegian Beekeepers Association."

Soon after I wrote that, a rebuttal came from Mr. Johnsen, which I chose to publish in my November issue: "My article is about my surviving as a truly organic beekeeper. In the concept for me surviving with my 600 colonies, small cell size is a vital part and the figures are mentioned to give the background for why small cell size is important in my concept. The mentioned figures are results from hives which I've got with the design described." It is important to note that this quote did not come directly from Mr. Johnsen who apparently does not use a computer and so did not see the original online postings, but indirectly from two other persons who reportedly got feedback through personal communication with him.

This provoked other replies concerning validity of the information reported. The discussion can be gleaned from the Web and is not the focus of this article. However, Jim Fischer whose words have graced *Bee Culture* in the past concluded in one of his replies: "...if one is participating in an organized research effort, it is generally assumed that one will follow a specific protocol, contribute one's data, and let all the data be analyzed before making any possibly rash statements about what is seen in a mere subset of the data.

"It is a shame that the actual paper may be blocked from being published in a peer-reviewed journal due to this 'pre-publication' of partial data by one 'loose cannon' among the large number of people who participated in the effort. Peer-reviewed science journals most often flatly refuse to publish research that has been already reported on by the popular (layman's) press or another journal before being published in their journal.

"The net result may be to take hard work by many people resulting in good hard data, and make it all seem 'questionable' or 'unpublishable' simply due to this error in judgment by one participant. That's a shame when the goal seems to have been to do a large-scale study and have the results be accepted as 'Science' with a capital 'S'.

"So, it is not about 'freedom of speech', its not about 'turf', it's not about 'ego', and it's certainly not about what any one participant THINKS he might be able to conclude from his hives alone. It is about doing science, working as a member of a team, and refraining from grandstanding to get one's 15 minutes of fame. This is expected in any multi-researcher effort. Violate these basic rules, and no one will ever want work with you again in this lifetime.

"That didn't happen. Two magazines got conned, and so did an entire national beekeeping group. That's sad." In addition, responding to another statement, he said, "I think it was made clear that it was all about statistical significance."[4]

Since the above discussion, several items have come to my attention regarding the scientific publication process. An article appearing in *The Economist* took on the topic of scientific accuracy and its relation to statistics.[5]

"Theodore Sturgeon, an American science-fiction writer, once observed that '95% of everthing is crap'. John Ioannidis, a Greek epidemiologist, would not go that far. His benchmark is 50%. But that figure, he thinks, is a fair estimate of the proportion of scientific papers that eventually turn out to be wrong.

"Dr. Ioannidis, who works at the University of Ioannina, in northern Greece, makes his claim in *Plos Medicine*, an on-line journal published by the Public Library of Science. His thesis that many scientific papers come to false conclusions is not new. Science is a Darwinian process that proceeds as much by refutation as by publication. But until recently no one has tried to quantify the matter." Some of the cited studies in Dr. Ioannidis' work now found to be wrong, according to *The Economist* article, include safety of hormone replacement therapy, coronary health improvement due to vitamin E. intake, and the relative effectiveness of stents over balloon angioplasty in coronary artery repair.

A major source of error is an "unsophisticated" reliance on "statistical significance," according to the article, which says: "To qualify as statistically significant a result has, by convention, to have odds longer than one in 20 of being the result of chance. But, as Dr. Ioannidis points out, adhering to this standard means that simply examining 20 different hypotheses at random is likely to give you one statistically significant result. In fields where thousands of details have to be examined...many seemingly meaningful results are bound to be wrong just by chance."

Another problem many in bee research can relate to is small sample size. The greater number of colonies to which experimental treatments are applied, the better will be the resulting information. However, the more colonies one includes in a study the more difficult and expensive it becomes. There are also more insidious sources of er-

ror, which often can equally affect beekeeper-initiated research listed by Dr. Ioannidis. These include studies showing "weak effect," such as a drug that works only on a small number or patients (bee colonies), or poorly-designed research allowing fishing for results beneficial to commercial interests (pesticide manufacturers) or that confirm pet theories.

According to *The Economist* article, "when Dr. Ioannidis ran the numbers through his model, he concluded that even a large, well-designed study with little researcher bias has only an 85% chance of being right. An underpowered, poorly performed study has but a 17% chance of producing true conclusions. Overall, more than half of all published research is probably wrong." The article concludes: "..he (Dr. Ioannidis) makes a good point – and one that lay readers of scientific results, including those reported in this newspaper, would be well to bear in mind. Which leaves just one question: is there a less than even chance that Dr. Iaonnidis's (sic) paper itself is wrong?"

Another article in *The Economist* discusses the future of scientific publishing: "All this could change the traditional form of the peer-review process, at least for the publication of papers. The process is organized by the publisher but conducted, for free, by scholars. The advantages afforded by the internet mean that primary data is becoming available freely online. Indeed, quite often the online paper has a direct link to it. This means that reported findings are more readily replicable and checkable by other teams of researchers. Moreover online publication offers the opportunity for others to comment on the research. Research is also becoming more collaborative so that, before they have been finalized, papers have been reviewed by several authors."[6]

Finally, it must be kept in mind that many times the details of publications are not fully examined by readers. The Devil is in the details when it comes to analyzing research as noted by Richard Lewontin relating the story of the wonder-rabbi of Chelm, who had a vision of the fiery destruction of a school in the city of Lublin 50 miles away. Some time later, all offered sympathy to a visitor from that city, but he said there had been no such event and on hearing the source asked, "what kind of wonder-rabbi is that?" One of the rabbi's disciples replied, "Well, burned or not burned, it's only a detail. The wonder is he could see so far."[7] BC

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To Bee Or Not To Bee

To bee or not to bee
Was nothing I did rue,
Until one day I found
That I was seventy-two,
And to my vast surprise,
I'd grown too tired to fly,
And all the different flowers
Smelled the same to me.

When I was a youthful bee,
All blossoms I did climb
To kiss the petals open,
And O, what I did find.
The honey that was there,
Took away my cares,
And for awhile gave me
A sweet and carefree mind.

The years went by on wings
And I learned many things,
But sometimes in my heart
I felt these little stings.
With every passing day,
I roved less far away,
And all the young bees said,
"Alas, You Poor Old Thing."

What time has done for me,
T'will do for you, you'll see,
But you should not despair
When grayness dusts your hair
With every passing hour.
Because, my wilting flower,
A light will fill your soul
And you will soon be free.

So here's the buzz my friends.
All bees must meet their ends.
Someday we'll all be bees
In a vast Eternity.
But till that day I'll fly
Around the sunlit sky
Where the sun is always warm,
And there's honey in the hive.

William Childress

Grand-Dad's Bees

Them bees just buzz and buzz and buzz.
And one would think that's all they does.
My Grand-Dad knew, and that's because.
He knew that they made honey.

And I would watch afar, way back
Because I knew they would attack
As bad, or worse, than yellow-jacks.
Still, he raised 'em for the money.

Ol' Grand-Dad, he sure wasn't scared.
He'd get himself up, all prepared
With nets and gloves and smoke filled air,
He'd lull them off to dreamland.

He'd pull that honey from the hives,
So help me, all those bees alive.
When he'd get done, and they'd revive
They'd set out makin' honey.

Yep! Grand-Dad kept them bees for years,
Kinds like an overseer.
And they'd give back, more than sincere.
Their "home," hives for the honey.

Bill T. Burden

Throwing Away Old Bee Equipment

James E. Tew

And Other Resolutions for 2006

Is it just me?

I accumulate stuff – and not just bee stuff. Does anyone else have this affliction? Here in my shop, I have a carved plaque above my workbench that boldly proclaims, *"Anything can be fixed!"* I can't take credit for the ditty. Many years ago, I was traveling in Mexico and saw a crude sign above the workbench of a Mexican craftsman making the claim and I filched the idea from that person.

So why relive this old story now? Because I save things that *"can be fixed"* but probably never will be. I reuse screws and nails. I save lumber scraps. Empty paint cans are potentially useful. I still have every old electric tool that has died on my watch, as though one day the old tool will heal and once again be useful. With this penchant in mind, I must say, that for all these years, I have also saved everything bee related. I've talked about equipment repair before and have actually restored some of this unloved equipment, but my accumulation rate is far greater than the repair rate. As a result, I am practically buried in old bee stuff that "could be fixed."

Resolution #1

Some of this stuff simply has to go, but choosing is tough. Through the years my lab has accumulated equipment that individuals have donated for our use. In nearly all cases, we used and appreciated these donations but the range of quality varied widely from (crudely) homemade to brand name equipment.

My primary problem is labor. I don't have the time and I simply can't afford to pay someone to repair trashed-out equipment. Even though much of this forlorn equipment could have more life, in many instances it is not worth the effort. In years past I have tried the following procedures to salvage some of this needful stuff.

Cutting deeps to mediums on the table saw

Boxes can be cut down to super size fairly quickly, but two points should be made. First, rather than pull out nails in the blade's path, which is time-consuming and can cause even more damage to the equipment, I use a carbide-tipped blade. When I saw through the occasional nail, minimal harm is done to the blade but this is potentially dangerous and I am not suggesting anyone try it, because sometimes errant nails go flying across the shop. Plus, the final cut tends to bind the blade, which is not good. I suppose a saber or reciprocating saw could be more safely employed, but keep track of your labor and blade investment. Second, on cut-down equipment the handhold is lower on the box than it should be. Not serious, but the equipment looks squatty on the hive.

Repairing rabbets with either wood or thin metal

I've done this hive body repair procedure and talked about it, too. Here, labor is the problem while appearance is secondary. Maybe it was my repair procedure. Recall that I save everything – including expired license plates. On an anvil I beat the lettering out of the plate and cut strips to repair a rotted corner, then caulk and paint it. I got a few more years out of the repaired box but this piece of equipment was not very attractive.

Using tired equipment

Let's see, I have used retired bee boxes as flower boxes and when stacked on the sides or ends as shelving. I've talked about cutting equipment down to improvise short tables or stands that I used as flower tables. One of the better ones looked pretty good. I scraped the deep hive body clean, made the alterations to improvise the table, and coated the creation with orange shellac. The box retained the character marks of the all its years of bee hivedom but was cleaned enough to look presentable. Several coats of polyurethane varnish on top of the shellac gave the piece some water resistance. But then, "How many of these does one need?" After about 10, I retired the process.

Use the equipment until it is unusable

This makes the most sense. When I had more colonies than I have now, we established remote yards where this old equipment was used up. The yard looked ratty. How many times have you heard the statement, *"the bees don't care"* when referring to worn equipment? But what happens is that this defective equipment is at last finally unusable and is removed from the

Preparing for the burn.

Hive carcasses in the dumpster.

hive. And guess what – it gets brought back to the storage barn where it gets put in the pile of "equipment to be repaired." Now I am back to Resolution #1 – this stuff has to go. I've got to break the cycle.

Discarding it all

While making the decision of what to keep and what to toss I had to be in a very harsh frame of mind. If the equipment needed any – any – repair, I tossed it. This was painful for my *"anything can be fixed."* What was even more painful was that any equipment that had been scorched to control American foulbrood, got tossed, too. Part of my legacy of taking any and all equipment from beekeepers who were leaving the craft was that sometimes the reason for their departure was foulbrood. So through the years we have routinely scorched equipment to justify putting it back into service. Scorching works to eliminate AFB spores from wooden equipment, but no doubt about it, that equipment is forever marked as having once been AFB infected. So as long as I was cleaning house it seemed a good idea to cut my inventory of scorched equipment. Some decent looking equipment went away. Where does old equipment go when it goes away?

Burn it

The regulatory people amongst us have a ready answer – to make it go away, burn it and believe me, I have burned equipment in my time. But I have a restriction that many of you do not. On university property in Ohio, open fires are very nearly not allowed. This restriction was brought on, in part, by the loss of several state-owned barns due to fire. Ideally, to burn equipment I must have fire fighting equipment (ergo a fire truck) on the scene. Not having that I must have university people on the scene and the local firefighting agencies must be forewarned that I have a fire going. Obviously I couldn't activate this system just to burn a few deeps, so I have allowed the equipment to accumulate. Now I am back to where I started in this article. This stuff is collecting – waiting to be burned.

For a while I used old combs to start Winter fires in the wood burner in my shop. The wax comb makes a remarkably hot fire in short order, but clearing out the wires and nails in the ashes is somewhat of a pain, and, I was not very excited about hauling home old combs that had to sit around until their burn time arrived.

On several occasions I have used an old brood box filled with kindling to start bonfires or campfires. It really made fire-starting easy. Sometimes though I got somewhat melancholy watching the fire consume the deep hive body, but that's just plain silly. Fire is a nonsense way to safely eliminate old equipment (air quality and global warming not withstanding).

Throw it away

Exactly what am I throwing away – combs, empty equipment, or both? If I were tossing combs in the dumpster, that would concern regulatory people and neighboring beekeepers. Late last year I discussed *"An Unclear Case of American Foulbrood"* in which I described the headaches of combs, honey, bees and equipment having been infected with American foulbrood. It is much easier to blame combs in a dumpster for spreading the disease rather than blame the greatest perpetrators – you and me – making splits and scattering AFB-infected brood combs. Throwing it away does not mean it goes away. Rather is goes to a land fill where it is covered – sooner or later. Maybe that's not a good idea.

Give it away

So why not just give this deserving equipment away? I can't, but maybe you could. The problem I have is the concern for *any*, and I do mean *any*, future cases of American foulbrood that the equipment recipient might have. We are all superstitious about the origination of AFB, and if I gave this old equipment to another beekeeper, especially something that had been scorched, that equipment would immediately be suspect when future AFB cases arose. Additionally, our equipment is branded so to protect the integrity of the brand I would need to counter brand it. More work.

And then there were the frames

I have several thousand frames that will never see the inside of a hive again. Wax moths, potential brood diseases, wire, plastic centers – what a mess old frames can be. I tried a pressure washer to knock the debris off these down and out frames. Scrapers and all manner of electrically powered devices for cutting the comb and propolis from the frames have not provided an easy answer. Refurbishing an old frame is time-consuming work. So they lay in wait – by the thousands.

Plastic Frames

So toss these wood frames and replace them with one-piece plas-

tic frames. Sounds efficient enough. True, I use a lot of plastic frames, but these frames do not have the rigidity that wood frames have. While I have not read or heard of the following procedure anywhere else, I frequently use a hammer as a hive tool – even with wood frames, but especially with plastic frames. Here's the situation: once the frames are firmly propolized in place, plastic frame top bars flex so much that my hive tool will not readily pull the first frame out, but rather will twist the top and slip from under the bar. By standing the equipment on end and gently tapping the frame – from the bottom – I drive the first frame from the equipment. After one frame is removed, subsequent frames come out easily. In the case of wood frames, excessive force will frequently pull the top bar from the end bars. The "hammer-hive tool" eliminates these problems in both plastic and wood frames.

Wood frames

If wood frames are sound and do not rack, I normally keep them, but if wax moths have made a major mess and the wood parts are badly chewed the frame goes away. If any part of the wood frame is broken or defective, it goes away. If the frame is an old pre-Hoffman frame, I keep it for its antique interest. These frames are easily recognized by the absence of the modern scalloped end bar. On the pre-Hoffman frame, the straight-sided end bar is fitted with a metal strap that passed from one end bar, over the top bar, and onto the opposing end bar and provides the spacing needed to respect bee space. These simple frames are throwbacks to bygone times and I keep them (for no good reason).

Resolution #2 - Combs in general

For combs in general, has the time come to stop recommending the time-honored procedure of using wax combs for years and years? Maybe all these comb-destroyed wood frames and the ever increasing comb-destroyed plastic frames are, in a way, a good thing. As beekeepers have been required to use various chemicals to control *Varroa* and other pests, concerns have been voiced that chemical residues in wax (combs) are affecting the health and vitality of our colonies and decreasing the monetary value of our wax crop. On the horizon is the supposition that accumulation of virus strains, vectored by mites, is adding insult to injury by causing even more comb contamination? Should the evolving recommendation be that a beekeeper should anticipate replacing the comb at regular intervals – say three to five years – and assemble the frame with that idea in mind? I am presently using some combs that are more than 20 years old. For these reasons, my Resolution #2 is to reconsider using comb for more than a few years and to explore ways to install foundation so that it can readily be removed at some future time.

Wired frames

Other than for historical value and education, I don't want to ever wire frames again – especially if such labor-intensive frames are to only have a short life. Should I consider using plastic foundation and install it in such a way to make it easily removable? Maybe all these wooden frames I am tossing are nothing more than old frames waiting to be modernized. At this point, I don't know.

But I do know this

This much I do know. I have to learn to deal with the elimination of old, not-to-be-used-again bee equipment. Throwing it away, giving it away, and burning it, are all imperfect options, but storing it forever has become a poor option, too. Wouldn't it be great if we beekeepers could find a way to make all this old bee equipment have antique value and then sell it to the public as antiques; thereby making money and getting the equipment out of bee circulation?

Phone calls

Primarily, in reference to my articles on *Unclear Cases of American Foulbrood*, a surprising number of you flattered me by phoning for more discussion. I dutifully tried to phone each of you back, but was not able to reach all of you. If your call was not returned, please don't be offended. You were not ignored, but after several weeks passed, I must assume that the moment has also passed. I am out of my office a lot, but I do try to acknowledge each of you. Thanks for calling. BC

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SMALESCALE QUEENREARING

Sideline Queen Production Objectives

Larry Connor

The easiest way there is to raise good queens.

In November I attended the 85th annual Florida Beekeepers meeting in St. Augustine, where the topic of African honey bees (AHBs) took up a major part of the agenda. The presentations reviewed a wide range of this topic, but by the end of the day it was pretty clear that AHBs are present in many areas of Florida, but – few notable exceptions – at very low levels. A large crowd of beekeepers from Florida and neighboring states attended to learn about the depth of this invasion. When Florida Apiary Inspector Jerry Hayes showed an animated graphic that added dots to a map of the state of Florida where AHB samples had been confirmed, the audience seemed to comprehend both the depth and breath of the invasion.

The current status of AHB in Florida means several things. First, all beekeepers in Florida and neighboring states will need to be very sensitive to the presence of AHB in their apiaries, regardless if bees are kept in suburban or rural areas, since bees are moved so much from one area to another within the state, and to other states. Florida has many points of concern, with its large retirement age population (less able to run away from stinging attacks), countless pets, a valuable horse and cattle industry, and those seasonal creatures that move into the state from the North each Fall and spend the Winter.

Second, as brought out by the Florida Farm Bureau and others, is the recognition that existing beekeepers are the solution, not the problem in regards to the African bee genes in the state. Managed colonies pose less of a threat than unmanaged feral colonies. This leads directly to the balance of this and future articles.

Third, swarms of unknown origin are a liability and clearly no longer an asset. Should new or hobby beekeepers collect swarms and install them in their hives? Probably not. Colony removal from buildings and other structures will require professional training, offering a new niche market for the willing beekeeper with the proper training, governmental certification and liability protection.

Fourth, the level of colony management increases, again. In addition to the usual hive manipulations, beekeepers add to their mite and hive beetle controls the need to check for invasion of their hives by small swarms of bees and a queen, bees that will wait to slip into the entrance of the hive and let the African queen destroy the queen in the hive. Military teams would benefit from the skill of invasion these small swarms possess.

Finally, of course, the media and public responses are heightened wherever there is a stinging incident. While this has lost the luster of attracting the national news, it will make great fodder for local papers and TV's "if it bleeds, it leads" mindset.

So what is a Florida beekeeper to do about a queen supply? What should a Massachusetts beekeeper do when bees from Florida are brought into nearby cranberry bogs for pollination this Spring? What will beekeepers throughout the country do when bees from Florida are spread out for honey production in their backyards?

Initially, most of these beekeepers will not need to do anything but keep their eyes open for defensive behavior by colonies in their apiaries. They should visit their apiaries often, and walk the yard, staying close to the hives (without smoking first, and while wearing protective gear) and observe those colonies that send out bees that hit the head and body without stinging. This is a step in the defensiveness behavior that precedes stinging. If bees hit you in the head or veil repeatedly, they are suspect, and must be watched carefully. If the bees are very defensive and sting a lot during colony manipulation, a sample should be sent in for testing.

Any highly defensive colony should be moved to an area away from potential harm to people and animals, and requeened (if possible) or depopulated with a solution of soapy water.

This article is the first of several to deal with the development of a small-scale queen rearing operation in areas where there are, or are not, AHBs in the area. Some of the same strategies apply to both, and we will carefully note the differences.

Stable supply of quality queens

Prior to the widespread find of AHB in Florida, there were a number of states with AHB, and all have provided protections of various types to minimize the spread of bees from those areas. But the widespread, albeit low level finds in Florida will make it very easy for AHBs, which are hybrids between European and African bees, to slip out of the state as they go to California for almond pollination, or to your state for honey production.

A second, widely-discussed topic in St. Augustine was the general problems with queens this past Summer. There are many, many reports of queens failing and then not being superceded. In these colonies, the queen disappears and no replacement cells are found. The colonies become hopefully queenless and respond

poorly at any effort to requeen them. The frequency of these losses was *staggering*, with 50 to 100% of all increase colonies losing queens during the summer of 2005. There are reports that this behavior had stopped or at least slowed in the Fall.

There is no clear indication of the cause of this failure to supersedure. There were many unrelated stocks demonstrating this behavior, which tends to rule out a genetic cause for the problem. Likewise, this is not a behavior associated with poor mating, since there were few colonies with drone layers. The queens just disappeared and were not replaced.

Chemical contamination is still a possible explanation, but no hive chemicals have been directly linked to this behavior. I'll refer to this as a "failed supersedure syndrome" in the rest of the article.

Beekeepers who did not experience this should be appreciative, and watchful for such a development in the future.

Stock acclimatized to area

Most beekeepers understand the value of using a bee stock that is fine-tuned to local environmental conditions of the area in which they are kept – timing their seasonal buildup to coincide with available nectar and pollen sources. When found, they use local stock with good wintering, buildup and production for queen propagation. This is excellent, but has limitations, since it may overlook improved stocks available to enhance these locally acclimatized colonies. Some effort should always focus on stock improvement utilizing the local, acclimatized stocks as the base of such efforts.

Stocks with proven mite tolerance/resistance are highly desired by most beekeepers, as are stocks with proven hygienic behaviors that will reduce disease losses. These stocks must also produce a nice brood nest, a satisfactory honey crop, and meet other needs of the beekeeper.

There are many stocks available in the marketplace that will serve as either breeder queens or drone mothers for stock enhancement programs. ***Breeder queens*** are usually instrumentally inseminated or mated in isolation, and are a good source from which to produce multiple queens for commercial and large sideline beekeepers. Because of their cost, they may be unjustifiable for many hobby and sideliners.

When an instrumentally inseminated (II) or isolated-mated (IM) queen is used as a breeder, all her daughter queens are a suitable source for drones of the stock the queen incorporates. We call these queens ***drone mothers***, and the II/IM queens are called ***drone mother breeders***. Their use in breeding programs presents a lower cost option for many hobby and sideline beekeepers, for the beekeeper may obtain numerous queens for less cost than of a II/IM breeder queen. Once safely installed in colonies, they can be stimulated to produce drones that carry the genetic traits equal to those of the queens. When enough of these drones are produced in an area they will make a significant (but not total) change in the genetic makeup of the production colonies in the area.

Mating a mixture of drones from survivor stock queens with some level of local acclimatization along with drones from purchased drone mothers will increase the genetic diversity of the drones mating to all queens in the area. There is growing evidence that this diversity is key to good disease control as well as mite tolerance/resistance.

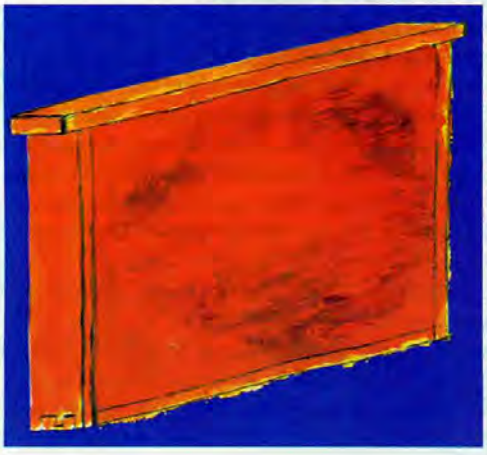
Cost of self-production

Delay in availability

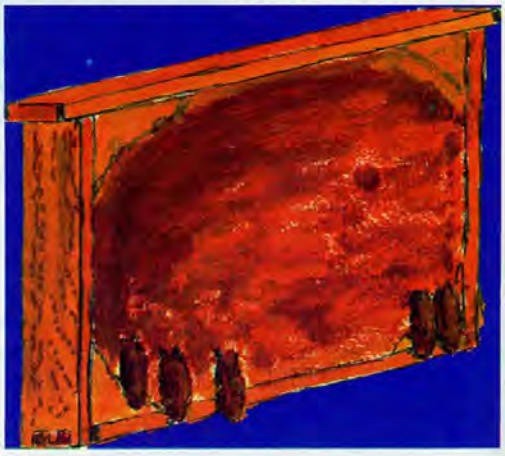
Many beekeepers avoid producing queens for the simple reason they think they MUST have all the queens they need for the year very early in the season. For many Northern beekeepers, this means having all queens from early April to the middle of May. The common perception is that after mid-May the queens cannot be employed in colonies that will be productive that same year.

This "calendar argument" starts to fall apart when 30, 50 or a larger percentage of the early season queens

Step 1. In order to use swarm cells for the production of new queens, you will need to make up a new colony called a nucleus or an increase colony. Select frames where most of the brood is sealed and preferably those with young bees emerging. You can actually see where the bees are cutting open the cells from the inside! These young bees will help grow the population of bees very quickly. You may find brood frames in more than one strong colony and remove them from the hive. Carefully shake or brush all the bees off the frame, making special effort not to injure the queen. Place two, three or four of these brood frames in the center of a 10 frame hive body.



Step 2. Go to the colony in which you found swarm cells. These will appear as peanut shaped cells positioned between the frames, and usually at the bottom. Make sure you do not damage any of these cells. You may use frames with multiple cells and let the virgin queens fight to decide which one will survive. Later you may cut out cells. Remove this frame and carefully BRUSH off the bees that appear on that frame. When the bees are removed, place the frame into the center of your nucleus colony, between frames of brood.



fail the first year, usually within the first month. Since the loss of the genetic traits is 50% each generation when no "like" drones are in the area, in three supersedures, a colony has only 12.5% of the original genetic material remaining. In addition to increased defensiveness (a frequent consequence of supersedure), these bees are nowhere near what they were supposed to be in the original colony.

Northern beekeepers can start queen rearing in late April or early May, depending upon the season, drone production, and local beekeeping history. This generates queens laying in increase nuclei in May and early June. If carefully done, these queens may not experience the high queen loss and will often out-produce colonies that have been subjected to multiple queen failures.

Over wintering mated queens

Brother Adam kept new queens in small hives for a year, including the Winter, before using them in production colonies. These were strong, vigorous, tested queens he used to requeen production hives the next Spring. Over wintering queens in nuclei is possible, and though not guaranteed, has been demonstrated on these pages. When successful, queens are not only available for the season, but they are tested and known to the beekeeper, and produce a viable option for queen success for both sideline and hobby beekeepers.

Benefit of self-production

Quality colonies from unstressed queens

The stress a queen experiences when shipped from a distant production yard to your apiary is considerable. If the queen is removed from a mating nucleus (called a baby nuc because of its small size), she will have laid just 500 to 1000 eggs for a day or two before she is removed. Thrown into a shipping cage (wood or plastic) and shipped with worker bees either in the cage with her or surrounding her and other queens in separate cages, she will be subjected to the rigors of shipping that include overheating, chilling, rough handling and even perhaps, pesticide exposure.

If introduced quickly into a colony she will not have yet produced normal pheromone production and will still be under stress from the shipping experience. She will be dehydrated, lighter in weight due to shrunken ovaries because her egg laying has been shut down, and probably hungry. This too is associated with reduced queen pheromone production.

Compare this to a queen that is laying in a nucleus in the apiary, and is simply transferred – queen, bees, frames and all – into a colony to be requeened (having removed the old queens before hand). She is subjected to very little stress, she will continue laying and the general disruption of adding a nucleus to a hive seems to deflect any fighting or aggression toward a new queen in *European* stock. If requeening an AHB colony, use the newspaper method to combine the two hives. If she is laying and vigorous, the new bees will accept her without question. A light feeding is required, of course, at any time you introduce a queen.

A queen may be obtained by moving a frame of queen cells into a queenless colony. The beekeeper finds swarm cells and then moves the frame and cells into a nucleus colony. Or the beekeeper may have produce a queen cell using some other method and add it to the nucleus when it was made up. With good rearing conditions and gentle handling, the queen has little stress exposure from heat, cold or pesticides.

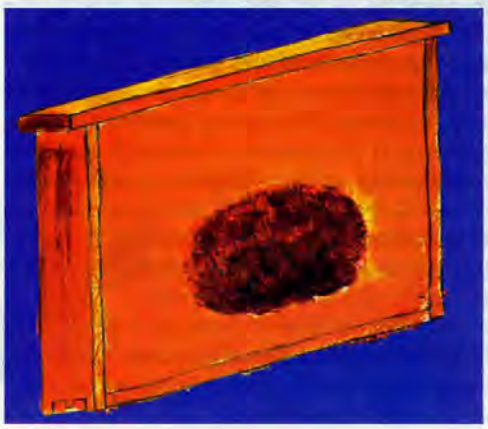
There is the risk of not having enough drones to mate with, and a knowledgeable beekeeper will have stimulate in advance certain drone mothers so as to have abundant drone brood sealed for at least five days before starting queen cells. If swarm cells are used, the beekeeper should see abundant (many hundreds) of drones *emerged* in each colony dedicated to drone production for queen mating.

Sale of extra queens to area beekeepers

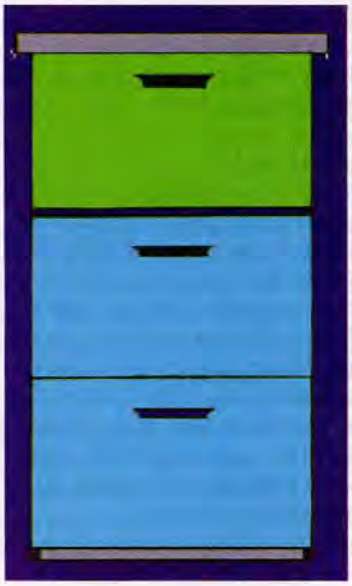
The sale of surplus queens is a growing potential for most beekeepers. Even if you sell one added nucleus colony, at 2005 prices of $65-75 for a five frame nucleus, the income will be worth the extra bit of effort required to produce the colony. And, from my perspective, that fee is more than fair to the purchasing beekeeper if the seller is a known, trusted area beekeeper.

A sideline beekeeper with just 25 hives may keep

Step 3. Find frames of honey and pollen from your strongest colonies, or from stored comb. Select at least two of these combs, since they will provide 10 to 12 pounds of honey if filled. One of these frames should have an area of pollen on it so the bees have a quick source of protein for brood rearing. The bees will continue to forage and add to this food supply, so this acts as an insurance against inclement weather. Place these two frames at one end of the nucleus colony.



Step 4. Arrange the combs you see here. From the top of the image: Two frames of honey and pollen (yellow). Three frames with emerging brood, one of which holds queen cells (gold). These must be carefully moved so as not to damage the cells. A frame of brood and pollen, or lacking that, an empty comb (brown). Three or four frames of drawn empty comb (red), that may include a drawn drone comb (green). This image shows nine frames total, a precaution I use because it is so easy to damage queen cells by squeezing frames together. With nine frames you have extra space. Once the queen is laying, you should add a tenth frame.



Step 5. Place the increase hive body on top of a strong colony in the apiary, preferably not one you have removed brood from. Separate the two hives with a queen excluder. Since the brood is not covered with bees, young nurse bees will crawl through the queen excluder to cover the brood. After several hours it will be easy to remove the increase colony to a new permanent bottom board in the same or another apiary. It is not necessary to move these bees since they are all young and have not flown. For further details on this procedure, consult G.M. Doolittle's, A Year In An Out-Apiary, *reprinted in 2005 by Wicwas Press.*

20 to 40 five frame nuclei at all times during the season, housing self-produced queens for a constant supply in his or her own operation and for sale to other beekeepers. If the queen came from cells produced during the Spring buildup and mated when forage and weather conditions were optimal, the queen should will be ideal for local conditions.

Queen cell production methods

Simplest method: using queen cells from swarm cells

G.M. Doolittle promoted the production of queen bees by transferring larvae from one cell to a queen cup in a process commonly called grafting. But Doolittle also championed the use of queen cells that were naturally produced by bees under the swarming impulse, and by doing so, eliminating the need to deal with the entire queen cup, grafting tool, cell starter, cell finisher process needed for other methods of queen rearing. He considered these to be the best produced queens a colony could make.

Doolittle always kept a minimum of 20 pounds of food (stored honey) in Spring colonies, and added frames containing honey if the colony has less than that amount. During the spring, all colonies were watched carefully for buildup, and equalized by moving both brood and food resources so all colonies were building at the same rate. When one colony started to build swarm cells, all the colonies were at roughly the same point of development, and Doolittle would harvest the frames with queen cells to make up new colonies.

This process removed bees and brood from colonies, and by doing so reduced their swarming instinct in the colonies. Repeat visits ensured the colonies did not swarm by removing additional brood/bees and yet keeping the colonies at a maximum population for nectar gathering in late Spring and Summer.

While it is possible to look at all the frames to be removed from a colony to make an increase colony and find the queen or queens, many newer or timid beekeepers will find it easier to gently brush off the bees with a bee brush from frames possessing queen cells. Every effort must be made not to touch the cells themselves. There will probably be multiple cells. Some may be removed if small, but nature generally sorts these matters out better than humans and I leave all the cells on the frame on the chance that my clumsiness may damage the cell I want, so another will be there to do the job.

Once the bees are removed from the frame of brood with the queen cells, remove two to four additional frames of brood from the same or other colonies (depending upon colony strength). Place this brood in a hive body over a queen excluder placed on top of a strong colony you have not removed bees or brood from. Put on the lid and leave the brood for an hour or more. When you return the nurse bees from below will have moved through the queen excluder to cover the brood.

Carefully move this hive body to a new position (since these are all young bees, you do not need to move the bees to another apiary). Place the hive body on a hive stand and fill up the box with three frames of honey and empty combs. Reduce the size of the entrance of the hive at this time if you have not done so already.

The emerging bees from one frame of brood generates up to 3,500 worker bees, so four frames of sealed and emerging brood will add up to 14,000 bees to this colony over the next 10 days or so. A sealed queen cell has no more than five days before the queen emerges and then 10-12 days to start laying. While the queen is finishing her development and mating, the bees will grow the colony with additional food reserves and build comb. So within three weeks after you make up the colony you should have a healthy laying queen in the increase nucleus. I recommend you mark the queen at this time to identify her as the queen from the colony source you removed the queen cell from.

At this point you may consider this colony a regular production colony, checking during the season that the queen is still present. If the queen is marked, you can compare her survivorship against queens you purchase from other sources, and reach your own conclusions about your ability to produce a quality queen.

Next month: Non-grafting methods for queen rearing. BC

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The Beginner

Peter Smith

Once you've finished the beginner's class, the real education begins.

Starting Out

People start beekeeping for a variety of reasons – interest in bees, conservation, making honey, 'retired and want a hobby' – and many others.

A lot of people think that they'll just have a box at the bottom of the garden and go and take honey off every so often. Must be nice to have your own fresh honey supply! And, of course, the bees pollinate the flowers in the garden, don't they?

Some have had a small amount of experience as 'my father/uncle/friend/man in the village used to keep them so I do know *something* about them!'

Sometimes, beginners get a couple of hives, complete with bees, given to them. A very short while afterwards, the new owner realises, having unadvisedly opened the hive, that maybe he, or she, doesn't know *quite* enough about it.

Most newcomers in our association have seen our publicity or heard a talk, and they enroll for the beginner's course which we hold each Spring. They are given a six (or more) week course and expected to attend the following association meetings on the various aspects of the craft. Upon completion of this period of enlightenment, they are deemed safe to be let loose on the unsuspecting world.

However, there are a few pitfalls along the way and the newcomer will, unfortunately, experience some of them.

Bad tempered bees

The beginner has completed the course and now knows all about beekeeping. The equipment, either new or second hand, has been acquired and the great day dawns and the bees arrive.

Some one has given up bee keeping and heard that the beginner has started and needs bees. A lovely gesture, "You can have mine – and I've got some surplus equipment as well"! What wasn't said was that the bees are quite sparky and the 'equipment' is many years past its sell by date.

The bees haven't been looked after properly and have been left largely to their own devices – including swarming and the queen mating with the most undesirable drones in the South of England.

The bees have become, let's say, less than friendly.

One of the worst aspects of bee keeping is Bad Tempered Bees, particularly those that give you a hard time at the hive and then take pleasure in following you back to the car and trying to continue their antics while you drive home. There's always one.

Unfortunately, some beginners seem to collect this type of bee and as they haven't known anything different they assume that, while at the hive, half the colony buzzing around, banging into the veil and stinging everything and everybody that they can within 100 yards, is quite normal.

That bad tempered bees collect more honey and make for bigger colonies is a long-held tenet of beekeepers. Fortunately there are many colonies that prove this wrong.

This type of bee is no fun at all and as most beekeepers are in beekeeping for pleasure, the newcomers can sometimes become quite disenchanted with nasty bees. Some have even given up.

We try and ensure that the beginners do, at least, start with a small colony or nucleus, of reasonably tempered bees, often bred in the Association apiary. Some of them, having been used to the more 'sparky' and unpleasant sort, are surprised that some bees can be handled without gloves.

The beginner now knows he has a problem – bad tempered bees.

Stings

During our course, we make sure all of the beginners are aware of the possible problems that stings can cause. They are advised of the pain and subsequent swelling caused by stings and also of the small possibility of anaphylactic shock.

The first time that they are at the apiary, the beginners are well watched. There are mobile 'phones at the ready and a supply of anti-histamine tablets - just in case! They are told that, if they get a bee *inside* the veil to let someone know (We would anyway - we'd hear the screams) and *not* to undo the veil to let the offending bee out – as happened on one occasion.

At this stage, they are beginning to wonder what they've let themselves in for. Bad tempered bees, stings. Whatever next?

Only a few things!

Swarms

After a while, the beginner has begun to get the hang of it. The bees aren't *too* bad, stings don't happen *too* often, the queen is laying, pollen is coming in and the next honey flow is nearly upon us.

However, the significance of the funny shaped wax things on the bottom of the frame has not been appreciated or has gone unnoticed at the last inspection. Then the bees swarm.

There follow frantic 'phone calls to the beekeeping buddy, or mentor, allocated to the beginner. How does the beekeeper get them back into the hive? They're all hanging up in a football sized cluster about

"Don't overlook zoning, ill-tempered neighbors, and other surprises!"

15 feet off the ground in a nearby tree. Would a butterfly net help? He has a ladder, but the swarm is on the outside of the tree on the springy branches.

There's hope. The swarm wasn't noticed until the beekeeper returned from work and it's quite cool, so it's unlikely that the swarm will move on tonight.

A spare hive is rustled up, a large pair of aluminium steps is borrowed and the 'buddy' sallies forth and the swarm is hived.

The beginner now has *two* colonies.

So far so good. He is learning, he has survived bad tempered bees, he has survived stings and been present at the collection and hiving of his first swarm and what's more, he has another colony.

Surely there's nothing else that can go wrong!

Varroa

The two colonies seem to be doing well. The weather has been kind, lots of nectar and pollen coming in and the bees are reasonably well behaved. Everything in the garden's rosy.

Then, at one of the inspections in late July, the beginner notices a couple of bees in the hive with deformed wings. Have the bees been fighting? How has the damage happened? *Varroa* was explained and described during the course and there was even a booklet about it given out, remember? However, with all the excitement of the other things, the 'Curly wing syndrome' has been forgotten.

The buddy is summoned again and diagnoses an infestation of *Varroa*. The honey super is taken off the hive: Acaricide strips are put into the brood box and a sticky floor put in place and left for 48 hours. An examination and mite count reveals that the mite drop is not too excessive and, as it's near the end of the year anyway, it's decided to remove the strips and put the super back.

Full treatment will be carried out in a few weeks time when the supers are taken off.

This beekeeping isn't easy, is it? Bad tempered bees, stings, swarms and now *Varroa*.

Surely there can't be anything else!

Wasps

Of the two colonies that he now has, one is a bit weak. It's August and the partially filled super of honey has been taken off and it's feeding time for the bees.

The super is taken home and put in the workshop bench for storage until the Association extractor is available. However, the bench isn't flat and there's a gap under the super. The board that is put on to cover it isn't quite big enough, but it'll do for a couple of days. There are no mice or rats, so all should be well.

Three or four days later, the super is lifted, but it feels quite light. There are lots of wasps in the workshop and the bench under the super is covered with small flakes of wax.

Disaster! Wasps have nearly emptied the super in just a few days. A big setback causing great disappointment at the end of the first year but there is a super from the other hive, so all is not lost.

Meanwhile, the feeders have been put on the hives and filled with sugar syrup – done late in the evening when the bees aren't flying to prevent robbing. Checking a couple of days later, the feeders are empty, but the hives aren't too heavy. Funny. The feeders have wasps in them! The cover wasn't tight fitting and the wasps have found the gaps.

Back to the supermarket for more sugar and start again.

This is getting silly; Bad tempered bees, stings, swarms, Varroa and now robbing. But it's nearly the end of the year, so that must be an end to the troubles.

Mice

It's now well into Autumn and the Acaricide strips have been in the hive for seven weeks and have to be removed.

One warm (ish) afternoon, the beginner goes to the hives to take the strips out of the brood boxes. He notices that there is a movement in some leaves in the bottom corner of the hive. How did they get in there? What now? Lifting out the nearest frame, he notices a large hole in the comb of three or four frames, with leaves, grass stalks and bits of fluff. The two mice occupying the nest shoot out of the hive.

Too late, the beginner recalls some talk about mouse guards, but thought that the narrow entrance block would prevent mice getting into the hive. He now has to get some guards from somewhere and put them on – and quick!

To the list of bad tempered bees, stings, swarms, varroa and wasps, he now has to think of mice.

And beekeeping was supposed to be an enjoyable and relaxing hobby.

Well. That's the end of the year, so nothing else can go wrong – can it?

Woodpeckers

Well, the beekeeping year is now at an end. The two colonies have been treated with acaricide strips for nearly eight weeks and the strips have now been removed. The bees have been fed, mouse guards fitted and both hives made secure. Bricks have been put on the roof to prevent them being blown off in a gale. All must be well.

One day, he just called at the apiary to ensure that all was well. Funny! What's that hole in the side of the brood box?

The beginner had noticed the large brown and red bird flying off as he arrived. The woodpecker had been hungry too and decided that there was a ready supply of food in the hive. The best way in was to make a 2" hole in the side of the brood box.

A piece of plywood was cut to size and nailed over the hole as temporary repair.

The list lengthens. Bad tempered bees, stings, swarms, Varroa, wasps, mice and now woodpeckers!

Next year, the beginner would know all about these things and be prepared.

Nothing more could go wrong this year at least.

January

Although not too cold and no snow yet, there had been a severe gale blowing for the last day or too. The beginner thought that he had better have a quick look at his hives.

Arriving at the apiary, he noticed that branches had been blown off the trees surrounding the apiary. One of these had fallen across one of the hives, causing more than a little damage.

Phone call to the buddy. Fortunately, the hive was still on its stand, but the roof was broken and the brood box damaged. A new roof was found and quickly replaced on the hive. Temporary repairs were made to the brood box

The list of problems associated with beekeeping was now lengthening at an alarming rate.

Back in the workshop, the supers with the frames of comb from which the honey had been extracted, had to be moved to make room for repairs to be carried out to the lawnmower. Removing the piece of wood covering the supers, the beginner noticed that there was lots of white cobweb like stuff all over and in between the frames. There were also hundreds of cocoon like things about an inch long and ¼" round in the web and stuck to the sides of the woodwork.

Wax moth.

The beekeeping year hadn't started yet and here was another problem for the beginner.

His friend down the road who encouraged him to start beekeeping had even worse news. He had gone to his hives – just to check – and found that some mindless vandals had kicked some of the hives over – you know, just for a laugh. Fortunately, there wasn't much damage as the vandals had chosen one of the least nice colonies and hopefully had been punished by the bees.

So. We now have bad tempered bees, stings, swarms, *Varroa*, wasps, mice, woodpeckers, gales, wax moth and vandals.

Spring

The Winter passed without any further incidents. The beginner was now really looking forward to his first full year of beekeeping.

In March, the floor boards were cleaned and examined. No problems. Good.

> *"Why do we do it? Answer that question after a year or two."*

The queen was laying well, the weather wasn't too bad, the bees had calmed down, there was plenty of brood and the farmer across the road had planted a field of spring Oilseed Rape. Honey should come pouring into the hives at the end of April.

But one day a month or so later, after a long spot of cool, wet weather, during an inspection of the hive, it appeared that the brood pattern wasn't very even and a lot of the larvae were twisted in the cells and discoloured. It didn't look a bit like the lovely, pearly white larvae in the other hive.

The 'buddy' was summoned and was shown the affected frames. 'I think we better call the bee inspector' was his comment.

The Inspector duly arrived, looked at the frames in both the hives and announced he thought it may be European Foul Brood. Samples were taken and sent to the Lab for confirmatory tests and a 'Standstill' notice issued. The Inspector said that the beginner was lucky that he didn't have American Foul Brood: if he had, the colony and hives would have to be burned on site.

The lab tests confirmed the EFB, but it wasn't *too* bad, and once the weather warmed, the honey flow started from that field across the way, and it quit raining, that EFB seemed to just go away. Well, that's good.

So, in addition to bad tempered bees, stings, swarms, *Varroa*, wasps, mice, woodpeckers, gales and vandals, there was the Foulbroods as well!

He didn't know it, poor chap, but later on there could be problems with officials and bureaucratic rules and regulation, like weights and measures and properly printed labels. Not to mention other pests, like small hive beetle, alleged to be heading his way, and other things like tracheal mite, drone laying (or no laying) queens and egg laying workers.

Why do we do it?

Luckily, our fictional beginner was resilient and able to meet the challenges which come to all beekeepers on a fairly regular basis. Some of these problems could have been avoided with foresight, but the man who never made a mistake never made anything.

Why do we do it? We pay out good money for the equipment required – hives, bee suits, extractors and wax cleaners. We get stung, we get bad backs from lifting hives, colonies die for no apparent reason and we suffer the disappointment of poor honey harvests. We have to pay out good money for the *Varroa*, Nosema and Tracheal Mite treatments and buy tons of sugar to feed the bees in Autumn.

We get inundated with calls from people who don't know a bee from a wasp and want you to drop everything and go miles to collect an imagined swarm. We get complaints from people when we increase the price of a jar of honey. The Lady indoors complains when we are going out to the bee yard again or to yet another bee club meeting and complains even more loudly when a drop (or two, never more than that) of honey gets on the kitchen floor when we're extracting

Never a season goes past without a beekeeper (or two) saying, "That's it! I'm giving up!" The next year, they're at it again.

Most hobby beekeepers do it for the love of the bees. We are fascinated by the workings of the hive, the behaviour of the bees and their interaction with nature. We like trying to control an uncontrollable being. We get terrific satisfaction when all goes well; when the queen does what she's supposed to, when the weather cooperates, and when all of our management tricks don't outright kill the colony.

We like being beekeepers.

Long live beekeeping. BC

Peter Smith is a hobby beekeeper, and beekeeping teacher, from Great Missenden, England.

NINE FRAME BROOD CHAMBER? NEVER!

Walt Wright

Old Steve stomped out in disgust. On his way to the door, he announced to those seated behind him, "That guy don't know (bleep) about bees." Steve considered some things sacred about beekeeping, and a 10 frame brood nest was one of them. He had kept bees all his life, and had the last word on any issue at that club. When I got to the part in the presentation where the manipulation was described, it was mentioned that I use nine frames from the bottom board – up. The concept of a nine frame brood nest was more than Steve could tolerate.

In a way, Steve was correct. The (bleep) I know was not the (bleep) he knew. He was well versed in the conventional wisdom of the literature, and he believed it without question. If you learn something early in your interest in a subject, and that opinion is continually reinforced over the years, it becomes *a fact*. Like the faith elements of religion, you believe it to be true, whether there is any supporting evidence or not.

Steve has gone on to that great outyard in the heavens, but he is remembered fondly. He taught me two things not related to beekeeping: Bucking conventional wisdom is a thankless task and no amount of persuasion or evidence to the contrary will make a dent in conviction.

Fortunately, there are some beginners and hobbyists without strong convictions, yet. I will devote what time I have left to getting those open-minded individuals to think about what they see.

My early beekeeping was done without benefit of conventional wisdom. There was no Uncle Fred (fictional family member), club or association group exposure, or how-to books on hand. Three hives were purchased from a co-worker and "winging it" was underway from the beginning. Learning by trial and error has advantages and disadvantages. The errors are an obvious disadvantage, but they are lessons not easily forgotten. Although having some how-to guidelines might be an asset, having them, and following them, tends to limit your thinking about what you see. When using a technique blessed by the experts, you are less likely to observe any adverse effects on the colony. The advantage to trial and error is that you tend to look for effects in the colony of things you do.

With the excessive introduction out of the way, let's get to the subject of this article. My beekeeping started with nine frames in all new boxes. It just seemed reasonable to maintain a straight line of comb from bottom to top. If we were going to use nine frame supers, the brood chambers should be nine frame also. No new box left the assembly room without nine frame spacers installed. In a pinch, they might go out unpainted, but they had spacers. It should be noted here that this is not an infomercial for the devices the Stoller family still sells. They didn't know that this article is pending, and, from the ads that have appeared in the past, it appears they may not recognize all the advantages of their product use. All of those other advantages will not be treated here.

There were several years of building hive count before a test of the nine frame brood nest was conducted. What "seemed reasonable" to this novice beekeeper was supported by the results of the test. A ten frame deep was installed below the nine frame basic brood chamber. The amount of congestion created by the frame count change was surprising. Incoming foragers were backed up to the bottom board and outgoing were backed up to the top of the brood chamber above. An interesting observation of the congestion was that it was peaked at the center of the brood nest. There was almost no up/down traffic at the hive sidewalls. This would lead to the conclusion that up/down traffic prefers to travel through the brood nest.

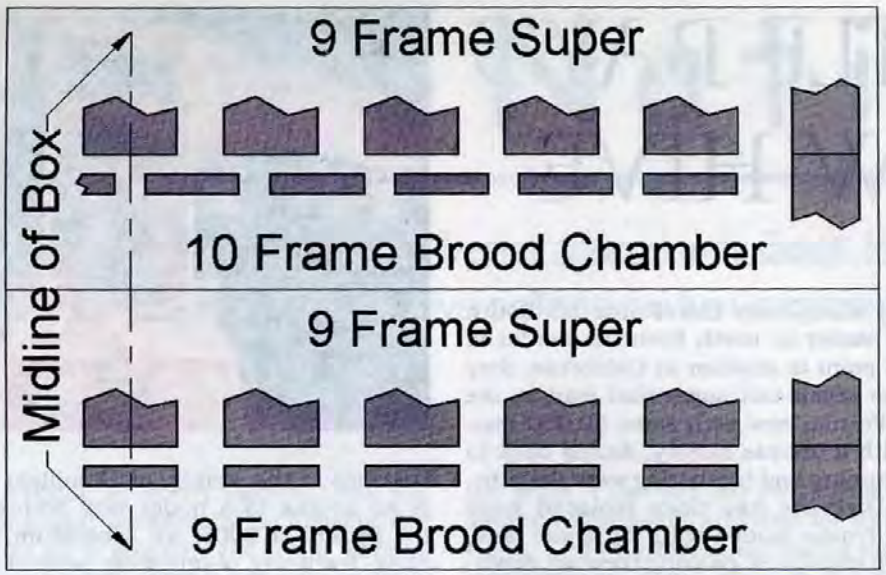
When you superimpose a nine frame box over a 10 frame box, frame five of the upper is squarely centered over the travel space between frames five and six of the lower. The offset is reduced in either direction as we move away from the center. And the congestion peaks in the center. Is the offset responsible for the congestion above and below? In my opinion, the congestion results from up/down traffic backed up waiting their turn to negotiate the frame change offset.

The bees have given us a clue as to the space desired for a direction change. If you have done residential tear outs, you will know that the colony builds comb down from the top, and stops about ¾ of an inch from the lower surface. This is their access space to transition from crawling on the floor to work in the combs. The deep side of the standard reversible bottom board is about 7/8 inch and close to correct. The reasons for the bottom board dimension are lost in antiquity, and those reasons are not considered higher in the hive. When you change frame count from 10 to nine, you are forcing the bees to change direction, not once but twice, in less than a half inch.

A queen excluder makes it worse. An article on

TIP OF THE MONTH

For a starter colony, (package, split, or natural swarm) be sure to use the deep side of the reversible bottom board if they must draw foundation. Using the shallow side to limit the entry may result in exposed reinforcing wires between the bottom of the comb and the frame bottom bars. They have a minimum "jump up" space between the floor and the bottom of the comb. Use the deep side of the bottom board and an entry reducer.



use of the QE has already been written but was too long. But, by treating the direction change here, that too-long article can be pared down.

There are other advantages to the nine-frame brood nest that are related to convenience for both the bees and the beekeeper. Travel through the brood nest is made easier. Although the up/down travel space is only increased by roughly and eighth inch between combs, every little bit helps. The same small increase helps ventilation by improving upward airflow through the brood nest if the top provides sufficient warm air overflow.

The eighth inch between frame spacing shoulders speeds up inspection time for the beekeeper. By gently slicing the propolis between spacing shoulders with the hive tool, a frame can be lifted out from the center of the brood nest. The extra space also reduces the rolling of bees when the frame is lifted out. When the spacing shoulders are touching and propolized, it is advisable to work your way into the brood nest one frame at a time from the outside.

To be fair, the disadvantages of a nine frame brood nest should be identified. The major disadvantage is the reduction in brood cells within a given cluster size for the winter start-up of brood rearing. With the increased spacing between frames, my four-dollar calculator reports there are 13% fewer cells within the warmed cluster area. While that sounds like a significant handicap to start build-up, my bees are able to overcome it. Locally, my feral stock are able to build two and a half stories of brood volume in three brood cycles in a typical build-up season. I don't know how that plays out in more northerly areas where wintering is marginal.

A second disadvantage is that the extra space also allows the building of "clunkers." That's my word for those lumps of drone cells built in late winter. An associate beekeeper calls them "queen killers." The bees have a need to rear drones during that season that will not be denied. If they do not have sufficient drone cells in reach, they will make provision, by building clunkers or converting worker brood comb to drone cell size. The tendency to build clunkers can be offset by providing drone cells in reach. I've got a piece on drone management in the planning stage.

The literature admonition to *always* draw foundation in a 10 frame configuration is over-reaction to a minor problem. In our novice years, one colony built a double slab of comb from the top bar spaced at nine frames. This year, another small, natural swarm did the same thing. In between, literally thousands of frames of foundation have been drawn with nine frame spacing that were well done. Since I'm not naturally lucky, and the odds so great, I'm inclined to dismiss the literature recommendation.

The bees are inclined to draw foundation that is in line with developed comb so as to continue the comb in line. This is true whether the foundation to be drawn is above or below the comb already in use. They also do better if the frame of foundation is between two frames of developed comb. The colony will sometimes draw foundation that is alternated with honey or nectar when they will not start on a full box of foundation. This is especially true in the main flow trail off.

To get perfect frames of worker brood comb for expansion of hive count or comb replacement, try this gimmick: Place a full deep of worker brood foundation between the brood nest and the first honey super that is being filled. Do this early in the main flow. The colony may use it for a ladder for two or three weeks, but eventually it will get filled and capped. Carefully uncap and extract the honey to maintain brood depth cells. Care is needed because the comb is delicate, but when extracted, it is a valuable asset. BC

Walt Wright is a retired engineer and a hobby beekeeper in Tennessee.

TURTLE BAY'S NEW HIVE

Larry Goltz

As traveler's zip along busy U.S. Route I-5 South from the Canadian border or north from the border of Mexico, or from one point to another in California, they cannot but miss the seven exit signs that lead to the city of Redding, California, now with some 80,000 residents. It is a city with a unique history, dating back to the days when gold mining and lumbering were the principal occupations. Diversity has since replaced most mining activity, but trucks loaded with top grade pine, fir and cedar logs are often seen passing through downtown Redding to nearby mills. As U.S. Route I-5 descends from the Cascade Mountains to the immediate north of Redding it enters the expansive Great Central Valley of California, one of the richest agricultural regions in the world; a leading producer of citrus crops, walnuts, almonds, rice, cotton and a variety of vegetables and tree fruits. Water is in fair abundance; essential to maintain this concentrated growing area. It is supplied from several reservoirs in northern California and from rivers flowing from the Sierra Nevada Mountains in eastern California. Water from Shasta, Whiskeytown and Lewiston lakes north of Redding supplement the flow of the Sacramento River that passes through downtown Redding, the site of Turtle Exploration Park. The river level is fairly consistent due to the 602 foot Shasta Dam built in the 1940s. It is the second largest dam in the United States; three times the height of Niagara Falls.

Signs along U.S. Route I5 direct tourists to exit at Redding to visit Turtle Bay Exploration Park near downtown Redding. This unique park has a stated mission to "educate visitors of all ages with entertaining and stimulating exhibitions and programs that interpret the complex relationships between people and their environment. Using the unique cultural, historical and natural resources of the Sacramento River region, Turtle Bay serves as a catalyst for exploring universal human experiences."

Recently, some additions have been made to the original complex of forestry museum, butterfly house, natural history museum and visitor center. Now, somewhat dominating the scene, is a 700-foot glass deck pedestrian bridge that spans the Sacramento River. Designed by architect Santiago Calatrava it is one of the few similar constructions in the world. The final cost was in the vicinity of 23 million dollars. The bridge is an access to a major new addition that opened in the Spring of 2005, an arboretum and botanical gardens, featuring plants from several climatic regions of the world similar to the semi arid ecological area of central and northern California. Plants were introduced from such places as South Africa, Australia, Chile and the Mediterranean Region.

Also, added to the educational exhibits in the natural history museum is an observation bee hive. Standing over six feet tall the cabinet grade construction has a tier of four-high deep combs. A short tube connects the hive to the outside. Garth Waters, a local beekeeper, worked closely with Turtle Bay exhibit technician John Doig to build the observation hive and stock it with bees. Mr. Waters had the plexi material cut and John Doig designed a system, which could be removable for servicing the bees safely outdoors. Cheri Mascis gathered pertinent information and images and worked with programs and exhibitions staff to refine the interpretive content shown in the attached plaques.

It is quite reasonable that the decision was made to add the bee exhibit to the museum's extensive static and revolving exhibits that are attracting thousands of visitors, many from out of state and around the world.

Dr. John C. Peterson, President and CEO of Turtle Bay Exploration Park, a former professor of horticulture at The Ohio State University, assumed the position recently and has provided solid leadership during the recent growth period.

Apiculture is an important part of the agricultural economy of the Central Valley of California. Thousands of hives of bees are annually trucked to the almond groves and to pollinate various fruit and vegetable crops and seed crops such as alfalfa. Shasta County, of which Redding is the largest city, has an apicultural industry unmatched by any other county in the United States. Most of the production is in the form of package bees, queens and from colonies used in pollination in the Pacific Coast States.

Having an observation hive placed in such a prestigious educational institution as Turtle Bay Exploration Park with its thousands of visitors, including many bus loads of schoolchildren, is a plus in familiarizing the public with the world of honey bees. BC

For more information, or if you would like to plan a visit – go to www.turtlebay.org.

Larry Goltz is a frequent visitor here, and a former Editor of Bee Culture.

Going Native

Blue Orchard Bees are different, not better than Honey Bees. Beekeepers would be wise to consider this alternative pollinator when approaching growers.

Karen L. Kirsch

In 1998 Chet Kendell of North Ogden, Utah became the first commercial orchard to exclusively use Blue Orchard Bees (BOB) to pollinate his crops. Kendell bought the mature orchard in 1989 having grown up in the community. He was in fact a fifth generation fruit grower. His wife, Mary Beth was from Traverse, Michigan an area rich in cherry heritage, so both had solid backgrounds in the business of growing fruit. But Chet's approach to growing cherries, peaches, apples and apricots differed from that of his or his wife's ancestors, specifically when it came to bees.

After experiencing several years of decreasing yields he sought advice from the Logan, Utah based USDA-ARS Bee Biology and Systematics Laboratory which works in conjunction with Utah State University biology department. Known as the Logan Bee Lab, their focus is on researching the more than 4,000 different species of bees other than honey bees.

BOB is also an excellent apple pollinator. BOB flies at low temperatures and prefers the "king bloom." Note how this bee has landed diectly on the anthers and stigma rather than the flower petals as some other species prefer.

Blue Orchard Bees are just one of several species being investigated for commercial pollination such as mason bees useful for New Jersey blueberry crops and Eastern state cranberries. There, research entomologist Jordi Bosch recommended that Kendell reintroduce native bees to his orchard of 328 sweet cherry trees, 80 peach trees and other fruit crops.

"The best strategy is always to work with local populations. Introduction of exotic pollinators should be the last choice since non-native species can bring disease and parasites and drive native populations to extinction through competition," said Bosch.

Since using the bees Kendell has enjoyed an average 3.2 fold production increase. "It's almost too good. Nobody believes it. It's hard to convince them, but it's the truth. I can see ten years from now a tremendous amount of demand pressure for these insects commercially. Cherry growers not using them won't be able to compete cost-wise," predicts Kendell.

Bosch says he would like to see other types of bees get to the same point as the Blue Orchard Bees for commercial use, but Kendell is hooked on these. "They are an alternative to honey bees, he stresses. They are different, not better."

Honey bees have been the dominate pollinators since the 17th century, but are subject to hazards like *Varroa*, tracheal mites and Africanized bees which can make entire apiaries ineffective. Blue Orchard Bees are exempt from these threats and they can even coexist in the same orchard with honey bees. Unlike colonizing honey bees, Blue Orchard Bees are solitary and act independently.

"For the orchard grower honey bees are like unionized workers. They don't work in the rain and they won't go out before 10:00 a.m., or so, then they go out and do their job and they do it well, but the Blue Orchard Bees go out when they feel like it – anytime, and they stay out later, so for the orchard crops in early Spring when it's cool and wet, they are a good alternative."

Named for their iridescent blue color Blue Orchard Bees are also less aggressive and do not sting, another compelling reason for Kendell who had received complaints from neighbors in his community about honey bees. "These bees are great around people, animals and in close proximity with neighbors. They are easy to work with." A Turner Broadcasting video featured Kendell's kids with the bees.

They typically immerge from Winter dormancy in March and April which coincides with orchard crop bloom, but by raising the temperature in incubation rooms they can be tricked into earlier immergence for crops such as almonds which blossom in February.

Fewer bees are needed to accomplish the work of thousands of worker honey bees. On average, two to four honey bee hives are necessary for one acre of crops, but a mere 300 Blue Orchard Bee females can do the same amount of work.

Honey bees which are great at *gathering* pollen are sometimes compromised in their ability to actually pollinate, but the Blue Orchard Bee is not a honey producer. She transfers pollen by landing directly on the reproductive area of flowers and scraping pollen from her body hair, thus *every* flower landed upon is pollinated. This isn't entirely beneficial.

"For instance, in adjacent orchards that don't need pollination you may end up with every peach blossom setting and then you need to thin them," says Chet.

One reason Blue Orchard Bees have not previously been widely used commercially was the lack of suitable nesting systems, but that has changed. As a mason bee it builds its nest above ground. In its natural habitat these nests are in abandoned beetle burrows in dead trees. Kendell has found the bees also like to nest in pussy willows which he added to his orchard. A plastic nesting block which can easily be transported to barns or sheds for Winter storage is now commercially available. The blocks have 49 7.5 millimeter holes. About 12 blocks per acre are required, so the interlocking structures are both economical and easy to use for farmers. For the truly thrifty the Logan Lab offers plans for a very simply-made wooden nesting block.

Kendell uses the wooden blocks. He places unwaxed paper straws in each of the holes. Eggs are laid inside the straws (which are easily removed with a tweezers). "I just gather up the straws and store them in the bottom of the barn." The straws are placed in a box with a screen on top. Possible parasites are thwarted by a tray with 1/4" of baby oil in it which sits next to the box. A black light focused on the oil attracts parasites which are then mired in the oil.

Osmia ribifloris *on blueberries. O.ribifloris is another native species, closely related to the BOB, but it specializes on small, closed flowers like blueberries (and possibly cranberries), another flower type that the Honey Bee is not particularly fond of.*

"I'm a tremendous proponent of the Blue Orchard Bee, says Kendell. I have absolutely no reason to go back to using honey bees." BC

The Logan Lab has published a How To book for fruit growers. For complete information including suppliers on getting started with these and other native bees, see the Logan Lab web site: (www.loganbeelab.usu.edu)

Karen L. Kirsch is a freelance writer living in Louisville, Ohio.

INNER ... Cont. From Page 10

. . . how many bees in that hive?

Let's talk about interviews for a moment. I want to address how *you* can steer the content of the information that gets printed from your interview. You won't control your interview, but it won't be a random conversation, either.

Reporters usually have to get a story by a deadline and they pick the low-hanging fruit. The easy questions, the obvious crowd pleasers and teasers. The above is a time honored query from a reporter who doesn't have a clue about bees, and beekeeping.

So let's take control a bit, and give that reporter some meat, instead of that fruit. Once you actually answer that silly question – how many bees – with something like . . . "Well, in the Summer, there's usually about 80,000 or so . . .", the reporter can do anything . . . go anywhere with questions . . . how many in Winter, my that's a lot, that means you've got over a million bees right here . . . and the low hanging, teaser pleaser gets a headline – "One Million Bees in Downtown Smallville." Ouch.

Rather, think ahead a bit, because you know that question will come up, and maybe give an answer something like . . .

"You know, that's a real good question, because there aren't nearly enough bees in that hive. In fact, for the last 20 years honey bees have been under attack from foreign invaders – Tracheal mites, *Varroa* mites, viruses, Small Hive Beetles – and today there aren't enough bees in this whole country to pollinate the food we grow to eat. We have to import bees to help us out!

"Beekeepers and their bees are in trouble, and the whole food economy is going to feel what's happening inside that beehive, right there, right now."

Now there's an answer any reporter would give eyeteeth to get. Invaders. The whole country. Food supply. Right here in Ohio.

Next time, think about what kinds of questions you'll be asked. What kind of information you want in the interview, and how to get it there. You can't control an interview, but you can get your message out, and every question, no matter what the question, is an opportunity to do just that.

If you don't believe me, listen to a politician get interviewed – they seldom answer questions, but they always get their message out. It works. Make it work for you, and for beekeeping.

Kim Flottum

A yard with one pollen supplement feeder in no-choice feeding.

FEED-BEE

A New Bee Feed Is Added To The Menu

Abdolreza M. Saffari[1], Peter G. Kevan[1], James L. Atkinson[2], Ernesto Guzman-Novoa[1],

A yard with three pollen supplement feeder in choice feeding.

SUMMARY

A new pollen substitute diet (named **Feed-Bee®**) has been developed at University of Guelph from current knowledge of honey bees' nutritional needs, and the composition of natural pollen and existing supplementary feeds. Its development incorporates the science and technology of animal and insect diets. In previous experiments, Feed-Bee® was fed in patties to colonies of honey bees and its palatability was compared with patties of pollen and a commercial diet, Bee-Pro® (Mann Lake Ltd, Hackensack, MN). Pollen and Feed-Bee® were equally well accepted by bees. The rate of feed intake (600g and 559g/colony/9-14 days) for both pollen and Feed-Bee® was highly significantly greater than for Bee-Pro® (27.3g/colony/ 9-14 days).

In order to test the palatability of the new diet in powder/dry form another feeding trial was made in commercial apiaries in early Spring 2004. In this trial, three different feeds, Feed-Bee®, TLS Bee food (Tony Lalonde Sales Prt., Clavet, SK) and Bee-Pro® were fed to 153 colonies in 15 beeyards. Two methods of feeding were used: 1) No-choice feeding, where each yard received only one of the three feeds, and 2) Choice feeding, where each yard received all the three experimental feeds throughout the experimental period (March 25th-May 6th). The mean feed intake of Feed-Bee® was 960g and 883g/colony/six weeks for first and second feeding methods respectively. These amounts were significantly ($P<0.0001$) greater than for the other two feeds. The amount of Bee-Pro® consumed in the two feeding methods was 224g and 238g/colony/six weeks and for the TLS Bee food, 115g and 120g/colony/six weeks respectively. These results show that Feed-Bee® is highly palatable to honey bees if fed in powder/dry as well as in patty form.

Key words: pollen, substitute diet, feed, honey bees, palatability

INTRODUCTION

The development of a pollen substitute for honey bees has long been an area of interest to the beekeeping industry. The possibility of improving the efficiency of beekeeping by maximizing honey production and crop pollination, to overcome pesticide damage and produce strong colonies against parasites, for package-bee production, and disease resistance lies, in part, in the development of an effective pollen substitute to feed the colonies when pollen is scarce. The key to producing efficient feed for animals, including insects, is obviously through using the very best ingredients with regards to palatability, health and overall cost (Wilson *et al.*, 2005; Macdonald *et al.*, 2002; Forbes, 1995).

There is no doubt, however, that even the most nutritious feeds, which contain all the required nutri-

Table 1. Mean feed-intake of three pollen substitutes by 153 hives during two feeding methods (no-choice, choice) in six weeks period

Given Feeds	No-Choice Feeding g/colony/6 weeks	Choice Feeding g/colony/6 weeks
Feed-Bee®	960 a ± 0.01	883 a ± 32.9
Bee-Pro®	224 b ± 0.04	106 b ± 7.1
TLS Bee food	115 b ± 0.01	52 b ± 1.5
Treatment Effect	$F_2 = 20.12$ $P < 0.0001$	$F_2 = 241.07$ $P < 0.0001$

Different letters after each value indicate a significant statistical difference between them by GLM Process

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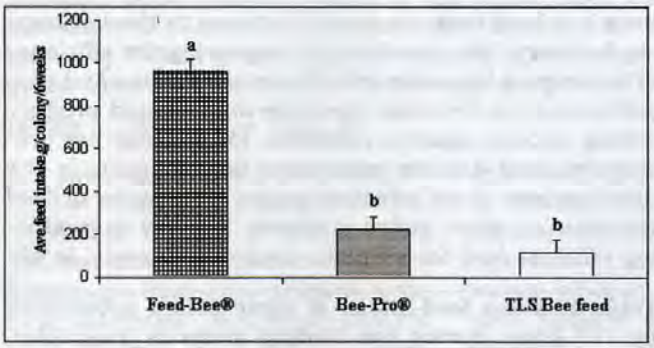
ents, have no beneficial value for the animals, if the feed doesn't reach their digestive tracts. In other words, the value of a feed is countered if it is not accepted by the animal (Wilson *et al.*, 2005; Macdonald *et al.*, 2002; Forbes, 1995).

Our main objective in formulating Feed-Bee® was to produce a highly palatable and nutritionally balanced diet for honey bees by exploiting the combined science and technology of animal and insect nutrition (Wilson *et al.*, 2005; Cohen, 2004; Herbert, 2000), pollen chemistry and biochemistry (Somerville 2001; Roulston & Cane, 2000), animal feed ingredients and insect feeding behavior (Wilson *et al.*, 2005; Cohen, 2004; Macdonald *et al.*, 2002), nutrient digestibility and palatability (Wilson *et al.*, 2005; Macdonald *et al.*, 2002; Herbert, 2000; Forbes, 1995), and incorporating a wide range of ingredients. After we had arrived at a formulation for the new diet (**Feed-Bee®**), which recent tests have shown to be highly nutritious (De Jong *et al.* Submitted) one of our primary concerns was to examine its palatability. We initiated our field research (Saffari *et al.*, 2004) in the late Fall of 2003 with "take-down" test, by which Feed-Bee® was given to the experimental colonies in patty form inside their hives. Its performance was compared with that of patties of pollen and Bee-Pro® (Mann Lake Ltd, Hackensack, MN). The feed intake (600g and 559g/colony/9-14 days) for pollen and Feed-Bee® was significantly higher than (27.3g/colony/9-14 days) for Bee-Pro®. To measure the palatability of Feed-Bee® in powder/dry form (open feeding) we compared its consumption with two other diets, Bee-Pro® and TLS Bee food (Tony Lalonde Sales Prt., Clavet, SK). We made the palatability test using bees in commercial apiaries where actual usage of pollen substitutes takes place.



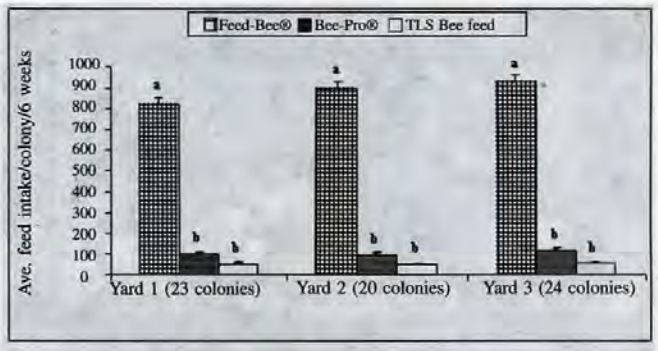
MATERIALS AND METHODS

Two types of open feeding methods were used. Feed-Bee®, Bee-Pro®, and TLS Bee food in powder/dry form were provided in pollen supplement feeders (Figs. 1 and 2) (from Tony Lalonde Sales Prt. Clavet, SK) over six weeks (March 25th-May 6th) in 2004.

The methods were:

1. No-choice feeding. In this method we used 12 commercial beeyards randomly assigned to one of three groups. Each group of yards received only one of the feeds in a single pollen supplement feeder located in the middle of the yard.

2. Choice feeding. In this method we used three commercial yards, each received all three of the feeds in separate pollen supplement feeders located in the middle of each yard.



RESULTS AND DISCUSSIONS

The feeding trails were made at a time when there were no natural pollen sources available and the weather was warm enough (except some rainy or brisk days) for bees to leave the hives and collect the pollen substitutes at the feeders. The feeders filled with Feed-Bee® were visited more frequently by bees throughout the experiment, for both the no-choice and choice feeding methods.

The average consumption for Feed-Bee® was 959g/colony/six weeks in the no-choice feeding and 883g/colony/six weeks in the choice feeding trial. The feed intake for Bee-Pro® was 224g and 106g/colony/six weeks and for TLS Bee food it was 115g and 52g/colony/six weeks in no-choice and choice feeding methods respectively (**Table 1**). The mean feed intake for Feed-Bee® was significantly ($P < 0.0001$) higher than for other two feeds. These results indicate that Feed-Bee® is highly palatable and very well accepted by bees, making it a highly promising pollen substitute. This result is consistent with the result of our previous feeding trial (Saffari *et al.*, 2004), where Feed-Bee® and pollen as patties were equally well accepted by bees.

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BETTER ASSOCIATIONS

A New Year, New Officers, and A Better Organization – Here's A Primer.

Ann Harman

Each year election time rolls around. The Nominating Committee got busy at the last minute. Phone calls and e-mails full of pleading: "you'll make such a *good* president." And everyone hopes that the local beekeeping association will have a competent set of officers for the new year. One hears "once the secretary, always the secretary" and "I've been treasurer for 17 years – could that be a record?"

Let's look at some of the workings of associations, not so much for the duties of each officer but what makes an association run smoothly. Generally an association, whether state or a local, has a president, one or two vice presidents, a secretary and a treasurer. But sometimes those two officers are combined as secretary/treasurer. Other times you find a recording secretary and a corresponding secretary. And don't forget a newsletter editor. The association's constitution and bylaws should describe the duties of each officer.

All who have ever been elected to an office at some point have been handed a large box – the hand-me-downs of that particular position. The large box is filled with paper. It turns out to be mostly rubbish. (The one I got contained some dead moths, too.)

Keeping track of necessary documents and those papers useful only for short-term can be challenging. Handing over the papers of office from one set of officers to another is a dangerous time. It is amazing what can get lost in the transition. Some people are organized and like to file paper and know where everything is. Others just make a big stack whether the papers are related or not. After a few avalanches everything is unfindable. (OK computer – what's a better word to describe that which is unfindable.) So a newly-elected president or secretary can actually end up with – not much.

An easy system is for officers to use 3-ring notebooks. One advantage is that they are colorful – you can have red ones or blue or green – color makes it easy to identify. One mail-order office supply catalog lists three-ring binders in eight different colors. That should take care of all sorts of categories. Each officer can use a single color different from the other officers. Another advantage is that the binders are bulky and not flat when closed. Anything put on top will eventually slide off exposing the notebook. And notebooks are easy to pass from one set of officers to the next ones. Even if the papers are not in any particular order at least they are in one place. At some point an organized officer will inherit the notebook and organize it. What goes into these notebooks? And how long should all this information stay in notebooks?

Are the officers and newsletter editor in communication with each other? It is so handy if all have e-mail. A group e-mail can be set up so that one can send a message to all. An e-mail system really works well and should be done if at all possible. If necessary a message can be printed to go into an officer's notebook.

The president should have a copy of the minutes of the meeting in order to review any motions for action and any business carried over to be presented as "old business" at the following meeting. A current copy of the constitution and bylaws should be in the notebook. It may be useful to have copies of the newsletters, if the association has one. Other matters would depend on the size and activities of the particular association. As the year goes by certain papers may be archived – saved as inactive but may have importance in the future. But don't save any scribbles or notes. There is no value in a piece of paper that says "Call Joe." Or "Pick up hot dogs."

How long should the president save information? It is a good idea to archive newsletters, but if the editor is doing a good job of this, then there is probably no need to save the president's copy unless a duplicate archive seems valuable. Papers and information that obviously have a short lifespan can be marked at the top with a discard date – use a colored marker. Discarding these marked papers helps keep the vital information easier to find.

Sometimes the president creates the meeting program; sometimes a vice president. I find that most vice presidents are program chairmen. I guess it gives them something to do. Being program chairman is perhaps the most important office – beekeepers come to a meeting because there is a good program. In the program chairman's notebook one should find names, addresses, phone numbers, e-mail addresses of prospective, current and past speakers. Information on the speaker's specialty is important in planning a meeting. Put down the date a speaker gave a presentation. It saves looking back through newsletters and programs to see exactly when a particular person gave a presen-

tation. Our memories are really bad even when they are good.

Along with the speaker's contact information could be information about expenses. Do they require plane transportation, a ride from the airport, an honorarium, a place to stay? Although prices of plane fares may change the information still gives a point for budgeting. Some speakers are doing research in the warm months of the year and cannot come to meetings. Add a note saying that a speaker may have a time-of-year preference. Consider all this information important enough to pass on to the next program chair. If it is in a nice colorful notebook it has a chance of surviving. I am sure all of it will be appreciated.

Is there someone in your association who contacts equipment suppliers and local businesses for door prizes or silent auction contributions? How about a small notebook listing major suppliers, contact information and donations? Since duties of this officer, or other association member, would not necessarily be in the constitution or bylaws, a sheet of paper inside the notebook could give a timeline for contacting suppliers. Add to this sheet a suggestion that each donation be tagged with the donor's name. And while we are talking about donations, does anyone ever thank the donors? Attach a postcard to each item, addressed to the donor and giving the item donated. The recipient can add a sentence or two and drop it in the mail. A nice thank you can go a long way toward good relations with equipment suppliers.

Now for the secretary's or recording secretary's notebook. The minutes of a meeting do not have to be in minute detail but should always contain basic information. Date, place of meeting, time of start and adjourn, number of attendees. Motions made and their results are essential. A list of speakers and their topics are good to have. To save endless leafing through endless minutes why not put a note in colored marker on the top of the first page of a particular set of minutes – "dues raised," "new bylaws," "special election." Such notes would be just for items that could be important in the future – when was the last time we raised dues?

And how long should minutes be kept? Well, probably forever, but that will never happen since they will land in someone's barn loft at some point in time. The minutes are essentially a history of the association provided they contain number of attendees and the various presentations. Although an association may have existed 50, 75 or even more years it is a good bet that its history is lost forever. In fact finding out even the date an association started may be impossible. Unfortunately small local associations start with a handful of members and those members probably do not think it important to keep track of anything. Look to the future – that small local could turn into a really big local. Get a notebook and start keeping records even if they are slim at first.

The treasurer's tasks really require some record keeping. Recording dues, writing checks and generally keeping track of what comes in and goes out and whether income must be increased somehow. Meeting expense records consist of great wads of receipts – from the speakers who are being reimbursed and from the grocery stores supplying the refreshments and food for meals. Add to this bundle another bundle of post office receipts, printing receipts, and the glorious designation of miscellaneous. Treasurers have two choices – a strong stapler or a shoebox. If your treasurer is the shoebox type at some point a new, perhaps better-organized treasurer will be elected.

Just how long should treasurer's records be kept? The IRS says that records for nonprofit associations must be kept five years. If your association is not nonprofit you should check with the IRS for your type of business. Just think, every five years you can throw out all the grocery store receipts. Just as well, most are unreadable anyway. I believe the receipt machines for many businesses, including banks, are never fed any ink – like gasoline tanks, they run on empty.

But before you give old records to the county waste system, look through then carefully to see if there is something of importance that should be saved. Mark it so that it is not discarded by mistake later.

Sometimes an association has an enthusiastic photographer. A nice photo album of picnics, award ceremonies, someone sleeping at a meeting, speakers, and demonstrations can be quite fun. Are these photos identified in any way? What year, who, where? Don't let the photos go the way of other records. Photos are a part of the history of associations. Fortunately nice photo albums are available everywhere. They just need someone to take care of them

It's January – a new year. Perhaps you need to make a new start with your association. If you are organized and fussy perhaps you can help make sense of the records essential to a well-run association. If you are the one with the shoebox, don't be too proud to ask for help in organizing. And do consider the colorful notebooks. BC

Ann Harman is looking for her notebook, somewhere in her home in Flint Hill, Virginia.

Honey Plants

Connie Krochmal

Canadian Thistle (photo by Mary Ellen Harte)

Buckthorn and Canadian Thistle

This month we'll look at several other important bee plants that are considered invasive in the U.S.

EUROPEAN BUCKTHORN (*Rhamnus cathartica*)

Originally native to Europe and Asia, European buckthorn was likely introduced to the U.S. prior to 1800. Many folks grew this as an ornamental. Popularly used for hedges, it was also planted for wildlife habitat, forestry, shelterbelts, and soil conservation purposes. By 1900 or so, it had escaped and naturalized over a vast area.

European buckthorn is known by various other common names, including European waythorn, Hart's thorn, and rhineberry.

Distribution

Presently, this plant is found in 27 states mostly in the Midwest and Northeast. It grows as far south as Virginia and westward to Missouri, North Dakota, Montana, Wyoming, and Utah.

Habitat

The ideal exposure for European buckthorn is partial shade. However, it also grows in full sun and full shade. This adapts well to most every soil type and condition, including dry and moist, well drained and poorly drained, and rocky sites.

European buckthorn thrives in a wide array of habitats that include fence rows, prairies, open and abandoned fields, farms, vacant lots, open woods, and pastures. It is also found in yards, and gardens. This plant commonly occurs in disturbed areas. Among these are clear cuts, and open areas in forests.

Common Buckthorn foliage (photo by Chris Evans, U of GA)

Description

European buckthorn is named for the spines. These occur at the tips of older stems and on the forks of the branches.

With a spreading, irregular crown, this coarse deciduous plant grows from six to 25 feet in height. It can take the form of a shrub or a small, bushy tree. Its brown to gray bark becomes rough with age. The trunk reaches a foot in diameter. While the heartwood is orange or pink, the inner bark is yellow.

Up to three inches in length, the dark green leaves feature greenish-yellow or light green undersides. Mostly opposite with two per node, they are sometimes alternate. These vary from oblong to almost oval with a pointed tip. Fine teeth appear along the margins. Unfurling early in the spring before those of native plant species, the leaves cling to the plant late into the year without changing color.

European buckthorn blooms from May through June. Yellow to green, the scented blossoms emerge with the foliage. They open in the axils of the leaves and along the lengths of the stems. Produced in clusters of six or so, these are small, and inconspicuous. They consist of four sepals and four petals. You'll find the male and female blossoms on separate plants.

This species produces clusters of juicy, round berries that vary in color from black or dark purple to purplish-black. They ripen from July through September. With about four seeds, these fruits grow to around ¼ inch in diameter. These can re-

main on the plants over the winter. As with holly bushes, only the female European buckthorns bear fruits. These berries act as a laxative on humans and other animals. That property is reflected in the Latin name for the plant.

Impact of European Buckthorn

In areas with well-drained soils, this extremely aggressive species is able to compete with native plants. It forms dense thickets that crowd out everything else. Farmers dislike European buckthorn because it serves as an alternate host for a serious fungal disease of oats.

Spread of European Buckthorn

European buckthorn spreads mainly by seed, and gets established quickly in disturbed soils. Birds carry the seeds to new sites. Other animals do their share as well. Among these are mice, elk, and woodchucks. Within just a few years, the fast growing seedlings become large enough to produce seeds of their own. Thus, the process continues. Seemingly in no time, you'll have a pure stand of European buckthorn.

Legal Status of European Buckthorn

European buckthorn is classified as a noxious weed in 45 states. Despite that, the plants are still propagated and sold by some nurseries.

Control of European Buckthorn

Prevent initial infestation by planting disturbed areas with appropriate plant species. Try to remove European buckthorn plants while they are still small and manageable. Young seedlings can generally be pulled by hand. For small saplings, a weed wrench works very well.

Simply cutting the stems or girdling the bark will not kill European buckthorn. The plants can resprout. What does work is to apply herbicide to the cut stumps. When a large number of plants are involved, this is the preferred method. For wetlands, use an herbicide labeled for aquatic habitats.

Controlled burning is effective for young European buckthorn plants if this procedure is repeated over a period of several years. However, burning alone will not destroy mature plants. In that case, herbicides

Canadian Thistle (UAF Cooperative Extension Archive photo)

are needed as a follow-up treatment. Apply the chemical to the new growth as it appears.

Related Species

The glossy buckthorn (*Rhamnus frangula*), a related species, is also invasive in some areas of the U.S.

Status of European Buckthorn as a Bee Plant

Bees love European buckthorn blossoms. These have nectar that is easily accessible. All the buckthorns, including the natives, are important nectar and pollen plants in the Northeast, Southeast, Plains, Southwest, and West. Wherever they are plentiful, these provide a surplus of honey with around 40 pounds per colony.

Buckthorn honeys are usually dark colored – often amber. For that reason, these aren't always as popular with consumers as lighter ones. They generally have a pleasant aroma and good flavor. In some cases, buckthorn honeys are so thick they are hard to extract. Usually, this crop doesn't granulate. Though it isn't true for every kind of buckthorn honey, some may have a slight laxative or cathartic effect, including that from the European buckthorn and coffeeberry (*Rhamnus californica*) – a native species.

CANADIAN THISTLE (*Cirsium arvense*)

Also known as field thistle and creeping thistle, Canadian thistle is native to Europe and Asia. This was introduced accidentally to the Northeast in the 1600s. Within about a century, it was considered an invasive.

Distribution

Canadian thistle is commonly found in nearly all states. The exceptions are Alaska, South Carolina, Georgia, and along the Gulf Coast westward to Texas and Oklahoma.

Habitat

Canadian thistle prefers full sun in a wide range of habitats including prairies, ditches, roadsides, right of ways, abandoned and disturbed fields, croplands, vacant lots, pastures, meadows, and along the edges of woods and waterways, and typically it moves into fields and other places where the soil has been disturbed.

Description

Without exaggerating, Canadian thistle could aptly be described as a plant on steroids. This herbaceous perennial reaches one to four feet in height. Its erect stems are ridged. Often hairy, these produce branches.

Canadian thistle has gigantic, creeping roots that can extend to 15 feet in all directions. As the old roots die, new ones replace them. Growing over seven feet a year, these give rise to new stems. The shoots begin emerging some time between March and May.

The shape of Canadian thistle leaves can vary from one variety to another. Typically, they will be oblong to lance-like with irregular lobes. These are alternate. Often clasping the stem, they have spiny edges. White hairs cover the undersides. The basal foliage reaches six to eight inches in length.

About two months after the shoots appear in the Spring, the first blooms open. These flower heads come in round, domed clusters. Most often the male and female blossoms appear on different plants. To tell them apart, smell the flowers. Those of female plants will be fragrant. Female blooms are also smaller.

Occurring on branched stems, the small flower heads are very numerous. A mature plant can produce 30 flower stalks, each bearing 40 or more flower heads. Usually, Canadian thistle blossoms are lavender or purplish-white. In some cases, the plants have pink or white ones.

Though Canadian thistle can be pollinated by wind, insect pollination is considered superior. The flower heads of female plants produce three to five dozen seeds per bloom, which mature in about a month. Tufts of hairs on the seeds help them blow to new locations. Water can also transport the seeds.

The overall germination rate of Canadian thistle seeds varies considerably from 95 percent to a mere 15 percent. However, these can remain viable for 20 years or more.

How Canadian Thistle Spreads

Though the plants can produce lots of seeds, Canadian thistle spreads mostly by vegetative means. As the roots expand into new areas, they produce additional shoots. A small piece of root carried by agricultural equipment to a new site is sufficient to get another plant started.

Despite the fact that the primary spread is accomplished vegetatively, seeds allow Canadian thistle to colonize new sites. Sometimes, these are found in contaminated hay and commercial agricultural seeds. Assuming a seed finds itself in suitable soil, it quickly gets established and produces 25 stems the very first year. That fact alone shows why there is such an urgent need to remove seedlings when they are first discovered, but more on control later.

Environmental Impact of Canadian Thistle

Of all the invasive weeds, Canadian thistle is considered one of the worst. After becoming established, it crowds out native plants, alters habitats, and diminishes the natural diversity. This weed causes millions of dollars in damages to agricultural lands and crops each year. It also harbors harmful insects that attack tomatoes, corn, beans, and other crops.

Common Buckthorn bark
(Chris Evans, U of GA)

Legal Status of Canadian Thistle

This is considered a noxious weed in all areas of the U.S. It has been classified as such since 1954.

Control of Canadian Thistle

Control of Canadian thistle starts with being proactive. Protect areas where the soil has been disturbed.

These plants are hard to eliminate once they become established. For best results, a number of control measures are generally combined. Quite often it takes several years to eradicate a Canadian thistle.

A single plant can be smothered with some sort of heavy material that excludes light. Examples would be tar paper, or large sheets of metal or wood. Before covering the plant, cut all the stems and foliage to the ground. It may be necessary to keep the cover in place for over a year to kill the roots.

When a number of plants are present, concentrate initially on getting rid of the female Canadian thistles. This limits their potential spread to new areas.

One method that does work is to keep cutting or mowing Canadian thistle for a number of years. Mow often enough to prevent seed production. This process eventually starves the plant so it can't produce any more shoots. However, this can take up to four years. Repeated tilling also gets rid of Canadian thistle. This method destroys the new roots and shoots as they develop.

Controlled burning has been used, particularly when Canadian thistle has invaded natural areas. In some instances, an herbicide treatment is used as a follow-up to Spring burning. So far as herbicides are concerned, several applications are needed. Don't waste time treating the older stems. Instead, concentrate on the new growth. Spray the entire stem. These are capable of photosynthesis.

With few exceptions, biological control rarely works with Canadian thistle. Control must go hand-in-hand with getting desirable plants established in the area to prevent re-infestation.

Status of Canadian Thistle as a Bee Plant

This is an important nectar and pollen plant in the West. Copious quantities of nectar rise up in the corolla tube, giving all sorts of insects easy access. A favorite among bees, the sticky pollen often ends up in the honey.

Canadian thistle supplies a surplus of honey. The crop is excellent quality. Light colored, it ranges from white or water white to transparent. Canadian thistle honey compares favorably to basswood and clover in terms of quality and taste. The mild, excellent flavor is very pleasant, and is probably the finest of all thistle honeys – which, certainly are in a class by themselves.

Next month, we'll look at more exotic bee plants that have become serious invasive weeds. BC

Connie Krochmal is an award winning garden writer and a beekeeper in Black Mountain, SC.

BEE CRAZY

Peter Sieling

Nobody wants to talk to you. No matter how long the lines at the theatre, there are eight empty seats circling you. At church there's always an empty pew ahead of and behind you. Most people consider beekeepers quaint, eccentric or even crazy. Beekeepers like to talk about bees but no one else cares. They'd rather discuss sports, the weather, world peace, or scrapbooking.

Spouses aren't interested in beekeeping. "Honey, you won't believe it! I found 43 queens in a single swarm! I just ordered 43 new hives by express. Shipping only cost nine hundred sixty-nine dollars and forty..."

"That's nice, dear. One of your socks is missing. Do you know what happened to it?"

"...three cents. How should I know? The dryer probably ate it." Nobody keeps track of socks like my obsessive compulsive spouse.

Neighbors are even worse.

"Here you go, Mr. Morton, a five gallon bucket of my finest white clover honey, just to say thanks for being a great neighbor!"

"You seen the sheets Edith hung on the line last March? Covered in bee poop! Man, if I can just swing one more board member..." (Wham! He slams his fist into his open hand.) "No more bees allowed in the whole county!"

Even high rolling authors have problems. I frequently attend writer/publisher conferences in Manhattan penthouses to meet editors and other writers. Last time, slinking into one of the evening cocktail parties, I saw John Grisham, Stephan King and Rick Warren talking to some Power Babe from Time or Reuters. She saw me and strode over – right into my personal space.

"Hey."

"Hey."

"What's your gig, big guy?"

"Huh? Gig? Oh, I write about bees."

"Really? How marvelous. Do you ski Vale? I haven't been since last year with my ex."

"Ski? No bees...Honey bees. I write about beekeeping issues, swarming, world honey production and prices, *Varroa*..." I see "the look" on her face – a subtle upward arch of the eyebrows, a momentary loss of speech, a nearly imperceptible shrug of the shoulders and a slight rolling of the eyes. Suddenly she's gazing past my shoulder.

"Bees! Oh how silly. Of me, I mean. Excuse me, there's Kim. Kim! It's me, Tonya!" Soon I'm standing alone within an invisible force field hearing snatches of global warming, European vacations and what Elton said to Tom Cruise at dinner last night.

That's why beekeepers have to assemble into clubs and associations. That's why when a beekeeper calls you on the phone trying to sell some old foulbrood contaminated equipment you end up talking for over an hour. That's why beekeepers have to waste time with other hobbies – so they can mingle with non beekeepers and not forget how to use their native language.

Well, Dr. Peter can help.

When alone in a crowd, take out your cell phone and pretend to talk to an imaginary friend. The conversation may feel one sided at first. You may run out of things to say, but with practice, you'll soon discover so many interesting topics to discuss, you'll have trouble saying goodbye. If, like me, you don't own a cell phone, use your TV remote. They look identical from a distance. It might seem awkward if someone asks to borrow your phone, but prepare a list of reasons why you can't loan it ahead of time, like "the only way you can get a signal here is to stick your tongue out and lie on the ground with one leg up in the air." The most effective response for me: "I'm so sorry but I can't loan my cell phone. I have lice." They won't ask twice.

When you are home alone and feel the need to talk about bees with another beekeeper, try this. With simple items found around the house you can fashion your own sock puppet. I named mine Father Langstroth. I have learned a lot from Father Langstroth, although at times he gets very nervous. Sometimes we go to the beeyard together. On occasions when he isn't feeling well and stays home (he's almost 200 years old), I can stay in touch with him on my imaginary cell phone. That's especially useful if I run into a problem like the last time my bees took a cleansing flight on the day Edith hung her laundry outside. Isn't that why they make dryers? Father Langstroth can usually talk me through any problems that arise.

"What did you say, Honey? Two nice men have arrived and want to take me for a drive? What? They're dressed in white? I'll be right there. They must be beekeepers." BC

Dr. Peter is a frequent contributor. he'll be back in touch just as soon as they let him use pointed objects again. He is from Bath, NY.

? DO YOU KNOW ?

Invasive Species

Clarence **Collison**
Mississippi State University

In recent decades, the frequency of biological invasions within the beekeeping industry has occurred at an alarming rate. Specific examples include chalkbrood disease, Africanized honey bees, small hive beetles, honey bee tracheal mites, and *Varroa* mites. To effectively manage these introduced pests/diseases, it is important to understand their basic biology. When these pests/pathogens are moved into new geographical areas, they are without their natural predators and parasites that are found in their endemic areas that are responsible for holding the pest populations in check. Thus, these pests become serious problems for the European honey bee and North American beekeeping industry.

Take a few minutes and answer the following questions to see how familiar you are with these topics.

Level 1 Beekeeping

1. ___ Male and female small hive beetles are similar in size. (True or False)
2. ___ Small hive beetles can live outside of beehives on pollen or rotting fruits and can reproduce on rotting fruit. (True or False)
3. ___ Africanized honey bees harass small hive beetles more than European honey bees. (True or False)
4. ___ It is now legal to import honey bees from Australia and honey bees and honey bee semen from New Zealand into the Continental United States. (True or False)
5. ___ The cape honey bee is a race or subspecies of the European or western honey bee. (True or False)
6. ___ The Africanized honey bee has recently been found in Louisiana, Arkansas, Florida and Alabama. (True or False)
7. ___ Four species of honey bees are found in the United States. (True or False)
8. ___ The principle component of Apiguard:
   A. Oxalic acid
   B. Formic acid
   C. Thymol
   D. Camphor
   E. Eucalyptus
9. Please explain how small hive beetles survive the Winter in the more northern parts of the United States. (1 point)
10. ___ The feces of small hive beetle larvae causes the honey in the cells to ferment. (True or False)
11. ___ Small hive beetles prefer hives located in full sun in comparison to hives in the shade. (True or False)
12. ___ Nurse bees will feed small hive beetles in cells and empoundments just like they will exchange food with another bee. (True or False)
13. ___ When small hive beetle larvae slime up a hive, what is the typical response of adult bees? (1 point)

Advanced Beekeeping

14. Genetic analysis of small hive beetles found in the United States have shown that there are ___ distinct mitochondrial DNA haplotypes.
    A. four
    B. two
    C. six
    D. three
    E. five
15. ___ Small hive beetles have recently been found in Australia and Egypt. (True or False)
16. Small hive beetle eggs will not hatch nor larvae survive at temperatures below ___° F.
    A. 40
    B. 60
    C. 50
    D. 80
    E. 70
17. Small hive beetles require soil moistures greater than ___ percent to pupate successfully.
    A. 3
    B. 5
    C. 7
    D. 10
    E. 1
18. The various races of honey bees found in Africa regulate small hive beetle populations in different ways. Please describe at least three bee defensive/regulatory behaviors. (3 points)
19. Name three adult small hive beetle behaviors that allow them to avoid harassment from the worker honey bees. (3 points)
20. ___ In natural populations of small hive beetles, females and males are normally found in equal numbers. (True or False)
21. ___ Small hive beetles can live, reproduce and survive in bumble bee nests. (True or False)
22. ___ Small hive beetle adult longevity is principally related to which dietary component.
    A. Fresh fruit
    B. Bee brood
    C. Pollen
    D. Rotting fruit
    E. Honey

ANSWERS ON NEXT PAGE

?Do You Know? Answers

1. **False** Male and female small hive beetle adults are not similar in size. Adult female beetles are longer and weigh more than males.
2. **True** Small hive beetles may use fruits as alternative food sources in the absence of honey bee colonies. A complete life cycle can be achieved on fruits. The number of offspring per breeding pair is significantly lower than on bee products such as pollen. In nature, reproduction on fruit appears to be rare, but an abundant food source other than honey bee colonies may serve as a refuge for the small hive beetle and a source of further infestations.
3. **True** Africanized honey bees protect themselves by active aggression towards both adult and larval small hive beetles. The bees try to bite or sting the adults but with minimal success. Africanized colonies rapidly remove unprotected eggs and larvae, which plays an important role for the apparent resistance of Africanized honey bees towards these beetle infestations. African honey bees are more aggressive towards the beetles than European honey bees.
4. **True** The U.S. government has given its final okay for U.S. beekeepers to import bees and queens from both Australia and New Zealand (the exception being Hawaii). Honey bee semen can also be imported from New Zealand under certain conditions.
5. **True** The cape honey bee (*Apis mellifera capensis*) is a race or subspecies of the European or western honey bee.
6. **True** Within the last year the Africanized honey bee has been found established within the Southeastern United States. It has been found in Florida, Louisiana, southwest Arkansas and in the Mobile, Alabama area.
7. **False** There is only one specie of honey bee found in the United States, the western honey bee, *Apis mellifera*. However, there are several subspecies or races of *Apis mellifera*, i.e. Italians, Carniolans, Caucasians etc.
8. C) Thymol
9. Even though the small hive beetle is of tropical/subtropical origin, they have adapted to the colder climates found in the temperate regions. Adult beetles survive the winter by becoming incorporated into the bees' Winter cluster and exploiting the clustering behavior of the western honey bee.
10. **True** As the small hive beetle larvae feed on brood, honey and pollen, the feces causes honey in the cells to ferment, rendering it unsuitable for human or honey bee consumption.
11. **False** Small hive beetles prefer hives that are found in the shade in comparison to hives in full sun.
12. **True** Nurse bees will feed the small hive beetles in the cells just like they feed a bee. When adult beetles are encapsulated in propolis prisons, the imprisoned beetles may survive for at least two months or longer by approaching the prison guard bees, extending their heads towards and making antennal contact with the bees, thus mimicking normal honey bee trophallaxis. Often workers respond with aggression, so it may take several attempts before the bees regurgitate food.
13. Bees abscond from the hive
14. B) two
15. **True** After the small hive beetles were found in the United States, they were since found in Australia (2002) and Egypt (2000).
16. C) 50
17. B) 5
18. 1) Removing unprotected eggs and larvae from the hive.
    2) Sometimes the bees succeed in "corralling" the adult beetles into specific corners or "herding" the adult beetles into specific areas, preventing them from moving freely over the combs.
    3) Encapsulating the beetles in propolis confinements, keeping them imprisoned for many days without food and water.
    4) Comb guarding or patrolling behavior.
    5) Remove adult beetles from cells.
    6) Absconding/migration- leaving the beetles behind
19. 1)Defense posture- When attacked, the adult beetles can perform a turtle-lke defence posture. While exhibiting this defense posture the beetle stays motionless and tucks its head underneath the pronotum with the legs and antennae pressed tightly to the body.
    2) Running- Beetles usually move very quickly out of the range of bees.
    3) Dropping- The beetles can deliberately drop from the combs to escape pursuit.
    4) Hiding- Inside the hive, the adults typically hide in small cracks, under the bottom board or in cells.
20. **False** In all of the locations sampled, there tended to be more females than males at each location over the course of the season. Females also exceeded males in laboratory-reared populations.
21. **True** Laboratory research has shown that small hive beetles can also live within bumble bee nests. Small hive beetles are able to complete an entire life cycle in association with bumble bees. However, it is unclear whether adult beetles are able to find bumble bee colonies in the wild.
22. E) Honey

There were a possible 13 points in each test level this month. Check the table below to determine how well you did. If you scored less than six points, do not be discouraged. Keep reading and studying- you will do better in the future.

Number Of Points Correct	
13-11	Excellent
10-8	Good
7-6	Fair

Clarence Collison is a Professor of Entomology and Head of the Department of Entomology and Plant Pathology at Mississippi State University, Mississippi State, MS.

GLEANINGS

JANUARY, 2006 • ALL THE NEWS THAT FITS

TYLOSIN APPROVED!

The U.S. Food and Drug Administration (FDA) has approved TYLAN (tylosin tartrate) Soluble for the control of American foulbrood (Paenibacillus larvae) in honey bees. This is the first approval for the use of TYLAN Soluble in a minor species (honey bees).

TYLAN Soluble, a product of Elanco Animal Health, a division of Eli Lilly and Company, Greenfield, Indiana, is already approved for therapeutic uses in chickens and swine and production uses in turkeys.

TYLAN Soluble is the second approved new animal drug for honey bees that controls American foulbrood (Paenibacillus larvae). FDA reviewed extensive data to ensure the product met all necessary effectiveness, animal health, human food safety, and environmental standards. FDA has concluded that the honey derived from honey bees fed tylosin tartrate is safe when the animals are fed according to the approved labeling.

Specifics for the label can be obtained at the www.Elanco.com web page. Highlights from the label regarding honey bees are below.

Indications: For the control of American Foulbrood (*Paenibacillus larvae*).

Mixing Directions: Mix 200 mg tylosin in 20 g confectioners/powdered sugar. Use immediately.

Directions For Use: Honey bee colonies should receive three treatments administered as a dust in confectioners/powdered sugar. The 200 mg dose is applied (dusted) over the top bars of the brood chamber once weekly for three weeks.

Residue Warning: The drug should be fed early in the Spring or Fall and consumed by the bees before the main honey flow begins, to avoid contamination of production honey. Complete treatments at least four weeks prior to main honey flow.

Store at room temperature. (Excursions permitted to 40°C.) Avoid Moisture.

SUGAR: SUPPLIES DOWN, PRICES UP, IMPORTS CALLED FOR

Manufacturers of food and beverage products that contain sugar are calling on the US Department of Agriculture (USDA) to allow for more sugar imports in order to top up the nation's reduced sugar production and prevent a shortage of supply.

The combined effects of hurricane damage to sugarcane crops, delayed *sugar* beet harvest, serious transportation problems and the temporary closure of a major sugar refinery have severely restricted the nation's sugar supply, said the Sweetener Users Association.

According to the USDA's World Agricultural Supply and Demand Estimates, published in November, sugar stocks on September 30 2006 are forecast at 667,000 tons. This corresponds to just three weeks of supply or 6.4 percent of use, compared to an average level of over 15 percent, said the association.

Indeed, tightened sugar supplies have contributed to price increases for the commodity. The wholesale price for beet sugar was 42 cents per pound in November, compared to last year's price of 23 cents at the same time.

"Without additional imports, prices will remain high and there could be problems in meeting supply needs. In some cases products may not even be able to reach the market," said a spokesperson from the National Confectioners Association (NCA).

Sugar is one of the few commodities to still be subject to import quotas, meaning it cannot automatically enter the US market. In recent months the USDA has responded to industry concerns by allowing for an increase in domestic and imported sugar supplies.

from Bakery & Snacks

DEATH'S HEAD MOTH INTERCEPTED

Federal agents in November ensured the safety of North Carolina's tomatoes, potatoes and honey bees by seizing a half-dozen pubescent moths named for death.

Customs officers at Raleigh-Durham International Airport took the pupae of the rare moth, called the death's head moth, from the luggage of two people arriving from England.

The passengers said they were bringing the insects so their son could raise them. But the death's head moth, large in wingspan and freakish in coloration, is unwanted in the U.S. Its larvae munch on potatoes, tomatoes and tobacco plants. Adults sneak into beehives and feast, unnoticed, on honey.

The six pupae were seized Nov. 4. They are the first death's head moths known to be intercepted in the U.S.

"They're capable of movement. That's what tipped off the officer," said Glenn Landau, an entomologist with the U.S. Department of Agriculture who identified the pupae after their seizure.

The pupae have been destroyed, dunked first in scalding water, then in alcohol.

The death's head moth (*Acherontia atropos*) has notoriety among bug fans because of the yellow skull-like pattern on its thorax. A species similar to the one found in Raleigh was featured prominently in the horror movie "The Silence of the Lambs." In the movie, a serial killer raises the moths in his darkened home and leaves the pupae as a murderous calling card.

The moths are found naturally in Africa, Asia and parts of Europe – but not in the U.S.

But the death's head moth is popular among lepidoptera enthusiasts. "A lot of people in the U.S. would love to raise this species," Pittaway said.

It starts as an egg, and its bright yellow larva can grow up to six inches long and become as thick as a man's thumb, he said.

The moth Winters as a pupa before emerging as an adult moth, among the largest in its group, with a wingspan reaching 5 inches.

Death's head moths are traded on Web sites in the United Kingdom, where enthusiasts swap advice on how to raise them. On one site, half a dozen pupae can be bought for 15 British pounds (about $25). A dead, pinned adult moth recently sold on eBay for the equivalent of $12.

The pupae were seized from a pair of passengers arriving from London's Gatwick Airport.

The larva clicks its mandibles when disturbed; the adult moth can emit a squeaking noise; and, of course, there's the skull pattern on the thorax.

"It's sort of like people who have an interest in hissing roaches," Landau said. "They're novelties."

by Barbara Barrett
News & Observer

William T. Maxant (1908 - 2005)

William T. (Bill) Maxant, 96, a longtime Harvard, MA resident who owned three prominent local businesses, died Sunday, November 20, at his home. He was the husband of the late Helen (Korpacy) Maxant.

He was born in Pittsburgh, December 31, 1908, son of the late Frank and Hedwig (Wiebeck) Maxant. He graduated from Ayer High School and Burdett Business School in Boston. He lived in Harvard for the past 85 years.

Mr. Maxant was the co-owner of Chandler Machine Co., which manufactured textiles and sewing machines. He also owned Murphy Knife in Ayer and Maxant Industries, which manufactured honey processing equipment.

Bill was a Life Member of the Eastern Apicultural Society, the Middlesex Bee Club, and was instrumental in founding the Western Apiculture Society.

He was passionate about beekeeping, admiring covered bridges and flying his Beechcraft.

His survivors include two sons and a daughter-in-law, Theodore W. and Christine Maxant of Still River, and Camy Maxant of Harvard; a daughter and her husband, Valerie I. and Gunther Delker of Pepperell and also four grandchildren.

He was the brother of the late Arthur, Richard and Henry Maxant and Lucille Barber.

NEWS FROM THE HONEY BOARD

New "Honey And Wellness" Brochure Available The National Honey Board recently published a new "Honey and Wellness" brochure emphasizing honey's health and wellness benefits to consumers.

The honey health and wellness benefits emphasized in the brochure include honey's nutritional profile, honey as a source of antioxidants, honey and calcium absorption and honey and "good bacteria." The brochure features recipe suggestions to help consumers take advantage of some of these wellness benefits, including a "Fruity Honey Smoothie" recipe to take advantage of honey and calcium absorption and recipes for "Honey Hydrator" and "No-Bake Honey Energy Bars" to help honey and athletic performance. The "Honey and Wellness" brochure also includes a chart featuring some of the most common honey varieties and suggested uses.

To help educate consumers about honey and its wellness benefits, suggested distribution avenues by honey industry members include fairs, meetings and trade shows.

Assessment-paying honey industry members and industry associations may order up to 100 copies of the brochure free of charge. To order, send an e-mail to order@nhb.org or call 888.421.2977, ext. 8.

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Request For Production Research Proposals Studying Colony Health The National Honey Board announced a request for research proposals regarding honey bee colony production in November. The goal of this research area is to help honey producers maintain colony health, while preserving honey quality.

Controlling such pests as *Varroa destructor*, *Acarapis woodi* and the small hive beetle is the primary objective of this research area; however, other projects will be considered, as well as research outside the U.S.

Approximately $60,000 has been earmarked for this study. However, the amount of funds available will depend on the number and merit of proposals accepted. Project funds will be available in 2006 and may be carried into early 2007 if necessary. The duration of the project should not exceed 12 months.

In 2004, NHB began exploring research opportunities to help beekeepers maintain colony health, without adversely affecting the production of quality honey. During the past few years NHB has funded seven such projects.

Research proposals should be sent to NHB on or before December 31, 2005. For more information, visit www.nhb.org/buzz/release102805-ResearchRFP.html, or contact Charlotte Jordan, project manager at 800.553.7162.

OBITUARY

Daniel Joseph Deasy (1911-2005) The death of Dan Deasy in September 2005 brought to a close the life of one of Ireland's oldest and most distinguished beekeepers.

It is difficult to do justice to a man who started life on a farm in West Cork when Britain still ruled Ireland. As a boy, Dan lived through the political and economic difficulties Ireland faced as it moved towards independence, and then the Troubles as the central government based in Dublin sought to unify a fragmented country.

Just over 60 years ago, Dan married a lively school teacher, Kathleen, a mature young woman who was to stand by him as he made his way in the world of insurance. Kathleen not only cared for her growing family but continued to teach and, in time, came to be a deep influence in organized beekeeping. As the years passed, their family increased with four girls and three boys all of whom, in one way or another, developed interesting lives and families of their own.

For so many Associations throughout the country, Dan and Kathleen Deasy were at the founding meeting and at many meetings thereafter. He was Federation President from 1974 to 1976 and was Secretary both before and after this term. He travelled to Greenmount and the London Honey Show each year and was elected as a patron of the London Honey Show last year.

Important as there were, Gormanston was the highlight. Dan would thank the Minister for opening the event with whatever combination of tact and honesty he felt would advance the cause of the craft. He would also throw some curved balls in the direction of aspiring lecturers and it shows the skill of the lecturers that once they were able to deal with these questions they could handle anything!

He was delighted when Apimondia decided to hold the 2005 congress here, although he had not attended earlier conferences. Everyone who attended the opening will remember him accepting his award and saying that it was his best honey year ever. He bowed out on this high note, with the craft of beekeeping forever in his debt for his massive contribution to Irish Beekeeping over so many years

A man of liberal outlook, Dan always prefaced his regular column in *An Beauchaire* (The Irish Beekeeper) with a quotation from one of the poets of Ireland or Great Britain.

Faithful Roman Catholics and teetotallers, they faced the challenge of old age with equanimity, Kathleen passing to her eternal rest in April 2004.

from Beekeepers Quarterly and An Beauchaire

WORLD HONEY UPDATE

China Issues National Standards China has issued a set of compulsory national standards for honey, which will take effect on March 1, 2006.

According to Yang Hanbing, director of the China Honey Products Association Honey Committee and chairman of the Beijing Baihua Honey products Company, the newly promulgated national standards add truthfulness requirements on honey.

The compulsory standards stipulate that any starch, sugar and sugar substitutive substances may not be added to or mixed into honey. The standards also ban the addition or mixture of foreign substances such as preservatives.

The standards also specify the methods and principles to test adulteration in honey.

Besides, the naming of honey products is integrated with international standards under the new standards. If other nutritious substances are added to honey, honey may not be used in the name of the product.

Where Will India's Cheap Honey Go? India produces a total of 70,000 tons of honey every year, of which 25,000-27,000 tons are being exported to more than 42 countries including the EU, the Middle East and the U.S. The EU slapped a ban on Chinese honey three years ago after it was found that Chinese honey contained high levels of 'Chloramphenicol.' However, the ban was lifted after China agreed to reduce the level of Chloramphenicol in honey bee treatment last year.

Randeep Singh, executive director of Kashmir Apiaries Exports said India's major honey importers were European countries. After the EU imposed the ban on Chinese honey, the price of the Indian honey exported to European countries jumped to $2,800 per ton in 2003. But the export price declined to $1,400 per ton in 2004, when the EU lifted ban on China, and further tumbled to $800 per ton in the current year when China started exporting honey to EU on a large scale.

Meanwhile, a mite menace is also threatening the Indian honey industry, according to Prof. LR Verma, president of IBKC and vice-chancellor of Himachal Pradesh University. As per a rough estimate, Mr. Verma said more than one million bee colonies are identified in the country, and *Varroa* has destroyed 20-25% of them. "There is market potential to keep more than 10 million bee colonies in India. But processing technologies and maintain styles of bee colonies should improve to increase the productivity," he said.

Turkey Is Second In Honey Production At the meeting on "Beekeeping and Honey Production in Turkey," which was organized with contributions of the Van Chamber of Commerce and Industry, the Turkish Apiarists' Union and the Provincial Directorate of Agriculture said Turkey was second after China in honey production. However, they said there were serious problems in Turkey about honey exports, advertising and marketing.

Bahri Yilmaz, head of the Turkish Apiarists' Union, complained about the inadequacy of legal regulations. He said the illegal honey commerce was a big problem for the producers in Turkey.

"This illegal honey is being exported with a 'Turkish honey' label. All the honey is sent back to Turkey when various chemicals are found in it," said Yilmaz.

Yilmaz said some 40,000 people in Turkey were professional beekeepers. Some 180,000 families earn a living from beekeeping, according to him.

"Turkey, with a production of 70,000 tons, is the second biggest honey producer in the world after China," said Yilmaz, adding that the European Union (EU) imported some 200,000 tons of honey each year. "But Turkey can only export some 18,000 tons to Europe. If the honey producers are supported, this production can expand to become a source of very important economic income."

Brazil Moving Up Brazilian exports of honey added up to US$10.8 million between the months of January and July this year. The state of Piauí, in the Northeast of the country, holds the second position for sales in the international market, with US$1.6 million. The first place was the state of São Paulo.

Of the honey produced in Piauí, 80% comes from the semi-arid region. According to estimates of the Brazilian Apiculture Confederation, Brazil owned, in January 2004, about four million beehives producing 33,000 tons of honey per year. The information is from the Brazilian Micro and Small Business Support (Sebrae) News Agency.

English Scam An English court heard that tons of cheap honey imported from Argentina and China were mixed and sold to dozens of small businesses in Norfolk as local honey.

William Baker, 58, and his wife Lynn, 54, are on trial in King's Lynn Crown Court on 12 charges of making false descriptions of food and 12 of obtaining property by deception.

Prosecutor Miles Bennett told the court at the start of a trial expected to last four weeks that it was only after a beekeeper became suspicious about the huge quantity of honey on sale from a producer he had never heard of that the "deliberate and dishonest scam" was uncovered when Norfolk County Council's trading standards department was alerted.

Bennett said the couple made sales to greengrocers, village shops, butchers and other Norfolk traders totaling 70,000 pounds between January, 2001, and September, 2003. He said the Bakers mixed and supplied 17.7 tons of foreign and English honey in jars labeled Smith of Norwich.

"Unwittingly all the people who sold this honey were themselves committing offences," he said. "It put retailers at risk of prosecution and it undercut the genuine producers."

The court was told a search of the Bakers' home found large quantities of Argentinian honey as well as buckets, boxes, jars and labels. Records in the house referred to 10.8 tons of honey from Argentina, 2.9 tons from China and 6.5 tons from elsewhere in Britain.

The Bakers had kept their own bees but had none in Norfolk and these bees could not have produced the amounts of honey sold.

"In short, it was a scam and a quite deliberate and dishonest scam," Bennett said. – *Alan Harman*

Imports Hurt Jamaica The Jamaica Ministry of Agriculture warned that illegally imported honey was threatening the country's beekeeping industry.

Chief apiculture officer Reginald Peddy said there has been an influx of honey into the island without authorization and this was threatening the growth of the local industry.

Peddy said he had seen this bottled honey on the supermarket shelves.

"We do know where it is coming from and we do know of the responsible agencies that are bringing in these."

Peddy advised consumers not to buy the honey, saying the foreign product was neither cheaper nor of better quality than local varieties.

"If our beekeeping population is wiped out because of these imports and because of diseases, then it means that our fruits and seed production will be drastically reduced also." – *Alan Harman*

Jelly Honey? A type of honey produced in northern New South Wales has attracted interest from scientists and doctors for its still unknown healing properties.

Jelly Bush Honey has been recommended by Australian doctors to help treat ulcers, burns, and sores. The honey has also been found to kill the bacteria Staphylococcus aureus, or golden staph, which is resistant to many antibiotics and is a major problem in hospitals.

Jelly bush honey comes from *Leptospermum* species, a native plant with small waxy flowers. However of 85 Leptospermum species in Australia, only one has so far been found to give the honey the extra anti-microbial activity. It is found in the coastal hinterland around Murwillimbah in north NSW.

The Jelly Bush is also known as the Goo Bush. Active Jelly Bush honeys are similar to the New Zealand Manuka honeys, which are derived from *Leptospermum scoparium.*

Honey from several species of *Leptospermum* turn to 'jelly' as soon as the bees cap the comb.

– *Alan Harman*

Display Advertisers

I'm always looking for the miracle medical cure. I prefer that it be dramatic, as in a 48-hour recovery.

Last Winter Doctor Al put me on a big dose of niacin and folic acid to lower my cholesterol. The cholesterol-reducing results were ultimately inconclusive. But two days after I started taking this stuff, my worn-out old ski patrol knees stopped hurting for the first time in 20 years. They haven't bothered me since. I told this story to two or three doctors, but they just shook their heads and became strangely quiet. None of them actually told me that I was nuts, but I knew what they were thinking – "First the body goes, then the mind . . ."

Spot suffered from allergies all Summer. You never saw a dog so pathetic. A few years ago I treated him with honey bee pollen, because it had helped my own seasonal allergies, or it seemed to. The problem with miracle cures is that you never know for sure. The last time I tried pollen on myself, I was sneezing 50 to 100 times a day. The pollen gave me some relief. But this was pretty much at the end of my allergy season, so who knows? Maybe I'd have gotten better all on my own.

But I even had the veterinarian intrigued when I suggested giving pollen to Spot. Our vet is a kind and dedicated young man who is also a little goofy the way people are who maybe smoked too much pot in college. "Wow, pollen might work," he said brightly. "Try it and let me know."

But alas, no amount of pollen gave Spot any relief.

This past Summer was one of Spot's worst. In September, at the height of his misery, the dear boy chewed his feet. He rubbed his snout on the carpet. He scratched his face. He covered up his eyes with his paws. He kicked his ears until they bled.

A self-appointed guardian of all animals, Linda was beside herself with sympathy. "He's tormented," she said over and over. She didn't approve of the medications the vet recommended. But when I suggested that we again try treating Spot with pollen, she threw up a firewall of resistance.

"He could have an allergic reaction," she said. "Like Russ and that poor person who bought your pollen at the fruit stand in Aspen. They both wound up in the hospital."

The Russ story was old news, but I learned only last Summer about the fruit stand incident. I'd sold to the stand owner for years. His place of business was just a half-mile from my bee yard. But when I inquired last June if he wanted more pollen, he balked.

"One of my best customers almost died from that stuff," he said. "I warned her to try just a taste on the tip of her tongue, but people are gonna do what they're gonna do. Man, I can't take on that kind of liability."

I wasn't worried about Spot having an allergic reaction. I was more concerned that his condition was driving him crazy. When I gave him pollen previously, it was in the Spring. Now it was Fall, so this would be different pollen. I figured it was worth another try. At least one thing was certain: Spot wasn't going to sue.

I tried to reassure Linda. "Pollen's not poison," I said. "It's just that some people are allergic to it. Some people can't eat peanuts. Or shellfish. But most people can. Spot's had pollen before. He'll be fine."

"Animals can't talk," Linda said. "They can't tell us when they're in pain."

"Sure they can," I said. "I'll keep an eye on him."

Linda gave me a look. "No!" she said, and I could tell she meant business.

I knew better than to argue.

But I like to live dangerously.

I began giving Spot pollen on the sly.

It looked like about half rabbit brush and half corn. Rabbit brush is ubiquitous around here. It was in full bloom, and I suspected it might be the source of Spot's agony.

I didn't want to get caught, but it was a risk I freely accepted. I did it for Spot. He's a good boy. He didn't deserve this.

Spot does not particularly care for pollen. He favors hamburger, or, even better, buffalo burger. So I'd take a bite-sized burger ball, make a little depression in it, and fill it with pollen. Spot did look at me funny when he inhaled his treat. As in, "Jeez Louise, what was in that, anyway?"

He did not have an allergic reaction.

A few days later, Linda said, "Spot's a lot better. Have you noticed?"

I said, "It must be the pollen."

For once Linda was speechless. She paused for the longest time. Then she said, "Well, he's definitely better."

The dear boy was lying peacefully at my feet. He wasn't twitching. I knelt down beside him and stroked him gently. I felt like I'd done a good thing. I also felt vindicated, but I didn't think it would be too smart to rub it in. Not yet. I said to Linda, "I think it's a miracle."

"I think he's cured," Linda said, her eyes shining.

When I stood up, my knees creaked, but they didn't really hurt. Not like they used to.

Ed Colby

Spot, and Pollen.