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Summer Solstice

At this time of the year, when we are gearing up for summer activities, temperate climate honey bees have received the message to ease up on brood rearing and start the slow glide into fall and winter.

Colony populations will peak in July and naturally begin to decline for winter, unless you have made divides (splits), started nucs, or somehow caused the bees to have some "catching up" to do. Brood rearing will decline steadily, with a "bump" in August and September that will generate the "winter" bees.

It is a good idea to begin thinking, now, about how your colonies are going to be supplied with the essentials for producing a substantial population of

healthy winter bees. The four critical needs are 1. space, 2. nutrients, 3. healthy nurse bees and 4. freedom from diseases and parasites.

Space for brood rearing often is a problem when too little space for the honey crop has forced the bees to store honey in the brood nest. That leaves too few empty cells for rearing adequate numbers of winter bees. Check the brood nest for suitable space around the beginning of August. A strong wintering population can consist of up to 20,000 bees. Is there space to produce that many new bees in your brood chambers?

New bees are built from royal jelly, some pollen, and some honey. Honey often, but not always, is in adequate supply. In late summer a good mix of nutritious

pollens can become the limiting factor, especially in western states. While you are checking for space, pay attention to pollen stores. Are there varied colors of fresh pollens being brought into the hive? Is there any fresh pollen coming into the hive, at all? If pollens are in short supply, plan to feed pollen substitute or pollen supplement (substitute beefed up with 5-10% pollen).

As young bees mature, they are most capable of producing royal jelly when they are 9-12 days old ("nurse bees"). Royal jelly is produced from nutrients extracted from digested pollens, thus the emphasis on pollens. Maximum royal jelly production depends upon healthy nurse bees. Infection with *Nosema*, or parasitosis with either tracheal or *Varroa* mites, decreases or inhibits production of royal jelly. *Nosema* disease should not be a problem in late summer. The mites require monitoring to determine their levels.

Successful beekeepers are aware of the above facts. They monitor their colonies regularly and do what is necessary to head off problems before they begin.

Honey - It's Not that Simple

Not too many months ago, the price for bulk honey was

so low that many beekeepers were considering throwing in the towel and leaving the profession. Even though efforts to reduce the amounts of imported honey legislatively had been pretty successful, the cost of production of a pound of honey continued to climb and prices were holding steady.

Then, the unanticipated discovery of unacceptable antibiotic residues in imported honey led to an abrupt halt in most of the imports. The result was an immediate, and continuing, elevation of the price of honey to nearly three times what it was previously. Barrels of previously "aging" honey (like good wines?) came out of the warehouses and into the Industrial flow. Beekeeping became almost fun again! Importers are applying for new permits for imported honey, so some change in the price of bulk honey may be coming.

Another interesting twist relates to the previously mentioned honey with antibiotic in it. Apparently, the antibiotic can be removed by an ultrafiltration process. The honey is diluted with water, ultrafiltered, then evaporated back to the moisture content of honey. The resulting product has lost quite a bit of the taste and other properties

that we think of when we say "honey." The change was so dramatic that the United States Food and Drug Administration has determined that the ultrafiltered product can not be called "honey" on the U.S market. Even the name "ultrafiltered honey" is not acceptable. It will be labeled "sweeteners derived from honey" or "sweeteners from honey."

It will be interesting to see what the European Union (EU) thinks of the product. According to the September 2002 issue of Bee Biz, a magazine for commercial beekeepers, the EU has just released its standards for honey. If honey complies with the standards, it can be purchased and sold in participating EU countries. Honey that fails the requirements can not enter commercial trade there.

According to Bee Biz, the rules are as follows:

Annex 1

Names, product descriptions and definitions

1. Honey is the natural sweet substance produced by *Apis mellifera* bees from the nectar of plants or from secretions of living parts of plants or excretions of plant-sucking insects on the living parts of plants, which

the bees collect, transform by combining with specific substances of their own, deposit, dehydrate, store and leave in honeycombs to ripen and mature.

2. The main types of honey are as follows:

(a) according to origin:

(i) Blossom honey or nectar honey - honey obtained from the nectar of plants;

(ii) Honeydew honey - Honey obtained mainly from excretions of plant sucking insects (Hemiptera) on the living parts of plants or secretions of living parts of plants;

(b) according to mode of production and/or presentation:

(iii) Comb honey - Honey stored by bees in the cells of freshly built broodless combs or thin comb foundation sheets made solely for bees-wax and sold as sealed whole combs or sections of such combs;

(iv) Chunk honey or Cut comb in honey - Honey which contains one or more pieces of comb honey;

(v) Drained honey - Honey obtained by draining decapped broodless combs;

(vi) Extracted honey - Honey obtained by centrifuging decapped broodless combs;

(vii) Pressed honey - Honey obtained by pressing broodless combs with or without the application of

moderate heat not to exceed 45°C;

(viii) Filtered honey - Honey obtained by removing foreign inorganic or organic matter in such a way as to result in the significant removal of pollen

3. Baker's honey - Honey which is:

(a) suitable for industrial uses or as an ingredient in other foodstuffs which are then processed

(b) and may:

(i) have a foreign taste or odor

(ii) have begun to ferment or have fermented

(iii) have been overheated.

Annex II

Composition criteria

Honey consists essentially of different sugars, predominantly fructose and glucose as well as other substances such as organic acids, enzymes and solid particles derived from honey collection.

The color of honey varies from nearly colorless to dark brown. The consistency can be fluid, viscous, or partly to entirely crystallized. The flavor and aroma vary, but are derived from the plant origin.

When placed on the market as honey or used as a product

intended for human consumption, honey should not have added to it any food ingredient, including food additives, nor shall any other additions be made other than honey.

Honey must, as far as possible, be free of organic or inorganic matters foreign to its composition. With the exception of point 3 or Annex I, it must not have any foreign tastes or odors, have begun to ferment, have an artificially changed acidity or have been heated in such a way that the natural enzymes have been either destroyed or significantly inactivated.

Without prejudice to Annex I, point 2(b) (viii), no pollen or constituent particular to honey may be removed except where this is unavoidable in the removal of foreign inorganic or organic matter.

When placed on the market as honey or used in any product for human consumption, honey must meet the following composition criteria:

1. Sugar content

1.1 Fructose and glucose content (sum of both)

(a) blossom honey, not less than 60g/100g

(b) honeydew honey, blends of honeydew honey with blossom honey, not less than 45g/100g

1.2 Sucrose content

(a) in general, not more than 5g/100g

(b) false acacia (*Robinia pseudoacacia*), alfalfa (*Medicago sativa*), Menzies Banksia (*Banksia menziesii*), French honeysuckle (*Hedysarum*), red gum (*Eucalyptus camadulensis*), leatherwood (*Eucryphia lucida*, *Eucryphia milliganii*), *Citrus* spp., not more than 10g/100g

(c) lavender (*Lavandula* spp.), borage (*Borago officinalis*), not more than 15g/100g

2. Moisture content

(a) in general, not more than 25%

(b) heather (*Calluna*) and baker's honey in general, not more than 23%

(c) baker's honey from heather (*Calluna*), not more than 25%

3. Water-insoluble content

(a) in general, not more than 0.1g/100g

(b) pressed honey, not more than 0.5 g/100g

4. Electrical conductivity

(a) honey not listed below, and blends of these honeys, not more than 0.8 mS/cm

(b) honeydew and chestnut honey and blends of these except with those listed below, not more than 0.8 mS/cm - exceptions: strawberry tree (*Arbutus unedo*), bell heather (*Erica*), *Eucalyptus*, lime (*Tilia* spp),

ling heather (*Calluna vulgaris*), Manuka or jelly bush (*Leptospermum*), tea tree (*Melaleuca* spp.)

5. Free acid

(a) in general, not more than 50 milli-equivalents acid per 1,000 grams

(b) baker's honey, not more than 80 milli-equivalents acid per 1,000 grams

6. Diastase activity and hydroxymethylfurfural content

(HMF) determined after processing and blending

(a) Diastase activity (Schade scale)

(i) in general, except baker's honey, not less than 8 mg/kg

(ii) honeys with low natural enzyme content (e.g. citrus honeys) and an HMF content of not more than 15 mg/kg, not less than 3

(b) HMF

(i) in general, except baker's honey, not more than 40 mg/kg (subject to the provisions of (a), second indent)

(ii) honeys declared origin from regions with tropical climate and blends of these honeys not more than 80 mg/kg.

Editor's Comments - You will note that there are a number of exceptions for "aberrant" European honeys that fall outside the "normal" ranges of criteria. However, non-European honeys

that normally fall outside the ranges don't get the same break.

In fact, the Director-General for Health and Consumer Protection of the European Union has proposed a suspension of imports of honeys from the U.S. The reason for this "because the U.S. Food and Drug Administration (FDA) monitoring of residues in honey does not meet EU requirements." The U.S. is sending only about \$1.2 million dollars worth (less than 1% of our 200 million pound crop) a year to the EU, but our FDA officials are very unhappy about this and plan to do something about it.

If you are interested in how the rest of the world of commercial beekeeping operates, with articles on *Varroa* control, honey handling equipment, disease control, etc., you can obtain a year's subscription (quarterly) to Bee Biz for about \$23. The U.S. contact is Steve Forrest, Brushy Mountain Bee Farm, 610 Bethany Church Road, Moravian Falls, NC 28654. You can reach Steve by phone at (910) 921-3640.

AHB Identifications

If you wish to have some analytical work done on bees to determine if they are or

are not Africanized, to whom do you turn?

In California, your best bet is the County Agricultural Commissioner. However, be advised that there won't be a whole lot of interest in areas of the state where AHBs are known to exist, unless there is a stinging incident where 15 or more stings are dished out.

In counties not known to be "colonized," like Kings County was until a survey was conducted in the middle of April, there still is a great deal of interest. Each ag commissioner wants to know when AHBs arrive in his or her county.

The survey involved 109 samples of individual bees. Of those, two samples from Kings County were AHBs. Bees with Egyptian ancestry were found in Fresno, Monterey and Santa Barbara Counties. The rest of the bees were determined to be of Eastern or Western European ancestry in Fresno, Kings, Madera, Monterey, San Luis Obispo, Santa Barbara, and Tulare Counties.

Outside of California, USDA/ARS transferred its AHB ID services from the Beltsville lab to the Tucson lab at the beginning of May. Now samples should be sent to: Carl Hayden Bee Research Center, 2000 E. Allen Road,

Tucson, AZ 85719. The phone number is (520) 670-6380.

Growth Regulators Safe?

Integrated Pest Management (IPM) experts have long touted insect growth regulators as particularly good substances to use for insect pest control. The two common types are mimics of molting hormone (get the molt started) or juvenile hormone (for ever a larva), and chitin synthesis inhibitors. The first two interfere with the molting processes of immature insects. The latter chemical prevents the proper building of the exoskeleton, somewhat similar to antibiotics that interfere with cell wall development in bacteria.

Normally, these chemicals have to be ingested by immature insects (but they can penetrate the cuticle) to have the desired effects. But, if these chemicals get into or onto the wrong places can they harm beneficial insects, such as honey bees? Jean-Noël Tasei, from France, has written a review article on the "Effects of insect growth regulators on honey bees and non-Apis bees." It was published in *Apidologie* 32(6):527-545, 2001.

Adult bees can handle pretty big doses of the chemicals, because they

aren't molting. However, treatments do tend to shut down the hypopharyngeal (food) glands, speed up the transition to "outdoor" bees, and shorten their life spans proportionally.

As might be expected, if larval honey bees encounter enough of these chemicals, they are killed or removed from the combs by the workers. With lesser doses, malformed pupae and emerging bees are seen. They appear to look similar to bees fed California buckeye pollen, pollen contaminated with certain fungicides, or bees with pretty high concentrations of *Varroa* mites: shrunken, flattened abdomens and stumpy wings.

Fortunately, most of these chemicals have not been problematic when sprayed on blossoming crops. However, there is enough data to show that field applications sometimes can be detrimental.

Almond Prediction

The May•June 2003 issue of *Almond Facts*, published by Blue Diamond Growers, includes a significant amount of statistics pertaining to the almond industry.

The table of most interest to me was the one dealing with this year's (yet to be

harvested) crop. It appears that California will produce around 883 million pounds of nuts. Added to a 170 million pound carry-in, we will have a billion pounds of nuts available.

Spain will be the next largest producer with 62 million pounds, but that is only a 60% normal crop. The next largest producers are Turkey, with 33 million pounds, Australia with 21 million, and Italy with 13 million. Greece, Morocco and "others" will produce 11 million pounds, each. That brings the total supply up to about 1.2 billion pounds,

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which is just a little bit over the 2002 record California crop. This year's sales are brisk.

Sincerely,

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