

IEBA BEEMAIL

Publisher: Jerry Tate

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Presidents Corner

I hope everyone is having a good year for honey right now. The honey flow is in full force and everything so seems to be pointing to a good honey crop. I have had some reports of supersedure of 2003 queens from the packages so be watching your hives. If you find queen cells started and the hive has lots of room it could be a queen getting ready to fail rather than a swarm. Many times I have missed the signs and cut all the queen cells and ended up in the fall with a queenless hive.

John Pierce and I are trying to get our web Inland Beemail working and need your help. If you are using the web or email please sign up. Signup on the Forum page and then follow the instructions below and you will be added to our notification list. You will then get an email notification.

<http://inlandbeemail.com>

On the forum, when a person signs up they will become activated as a user. After that, they should look at the top menu, under "The Hive @InlandBeeMail.com and click on usergroups. Currently it lists two user groups, IEBA and Beemail Online. To subscribe to an online notification of the inlandbeemail, they should join the Beemail Online group.

To do this, just choose the group in the online menu and click on the "view information" Link. In the next window you will request membership.

Items from Apis Newsletter

The American Association of Professional Apiculturists (AAPA) has updated its web site under the careful direction of Dr. Eric Mussen at the University of California, Davis, CA <http://entomology.ucdavis.edu/aapa/index.cfm>. This organization, based on the highly successful Canadian Association of Professional Apiculturists <http://www.honeycouncil.ca/capa.html>, includes some of the most highly respected apicultural researchers and educators in the nation

Story on Ultra fine Honey
He confirms that the National Honey Board and others are looking at Ultra filtered (UF) honey. "I heard just a couple weeks ago that some of those out there in the business of packing honey from China had a run in with the good-food people from our federal government and California's government. It seems that there's a lot of honey that was produced in China that had some illegal chemical in it – an antibiotic – and they figured out that if they filtered it absolutely to death they could get that stuff out. Well, it worked. But everything else was filtered out too. In fact, those in the know decided that it wasn't even honey any more. Just a sweetener made can't call that stuff honey when you sell it, and it seems some were trying to do just that, so the authorities clamped down on that activity right away and locked some of it up, I understand. I don't know yet if this is a criminal act, but it seems like it should be. I know you had a thing for people selling junk that wasn't

honey, and calling it honey. Times haven't changed much, have they?"

IEBA News

-Our Picnic date is set for Aug 17, 2003 at the Bob and Virginia Adsit.

-Dr. Carl Johanson's memorial service is July 13, at the Eagles in Couer D'Alene, at 209 E. Sherman. I don't have a time yet and will have it for the meeting so if you are not at the meeting call me and I will give it to you.

Inland Empire Beekeepers Association

This is our local association. It meets the 2nd Friday of every month at the Spokane County Ag Extension office by the County Fairgrounds, at 222 N. Havana. The executive board meets at 6:30-7:00, followed by a social hour till 7:30 when the general business meeting starts. The meetings end at 8:30. The association is affiliated with the Washington State Beekeepers Association.

Membership dues are \$5.00 for an individual or \$10.00 for the entire family. This includes your receiving the Inland Beemail, which is published by the association.

Another Opportunity to Shine-

On July 27th, the Inland Empire Gardeners have invited us to set up a display at Leisure Lavender Farms in Otis Orchards for their Spokane Valley in Bloom Tour. I have all the info and we'll discuss it at the upcoming meeting. Of course I'll be looking for some help. There is lots of space, they'd like to see a full display, bees, and whatever wares we can peddle. Frank Seiler will need some helpers and

anyone who has honey for sale can take this opportunity.

MAKING CREMED HONEY

by Roger Morse

It is natural for honey to granulate since it is a supersaturated sugar solution. Unfortunately, under natural conditions most honeys form large, coarse crystals that are objectionable because they are gritty. Most honey users prefer granulated honey that has small crystals. The granulation of honey has been studied extensively and the process can be controlled as was discovered by the late Professor E. J. Dyce and upon whose research this article is based. Dyce found that pasteurization and temperature control during the time the crystals are growing are the keys to making good crystallized honey.

Properly made crystallized honey spreads like butter at room temperature and does not drip. The crystals should be so small that they cannot be detected with the tongue and the product should be kept at room temperature, not in the refrigerator.

How to make crystallized honey

The honey that is to be forced to granulate (crystallize) should be strained to remove any dark specks of comb or other material. It does not need to be filtered. It is next heated to 140°F. for 30 minutes or 160°F. for one minute or a combination in between these two. This pasteurizes the honey and kills the yeast cells that are always present in any honey. The next step is to introduce and mix in ground up previously granulated honey, which provides nuclei on which the new crystals (seed crystals) may grow. The seeded honey is then placed in a cold room at about 57°F. Under the best conditions the honey will be crystallized and firm in eight to ten days.

The best temperature

Dyce made a number of experiments to discover that 57°F was the best temperature for crystal growth. The temperature should not be allowed to fluctuate, which is sometimes suggested. Honey held at 60°F and above does not form small crystals and below 40° there is almost no crystal growth. From a practical point of view, Dyce advised setting the temperature in the granulation room at about 55°F to compensate for any temperature fluctuations that may occur as honey and people move in and out of the cold room.

Pasteurization

All honeys contain yeasts, which can be seen only with a microscope. They cannot grow in honey with less than about 19 percent water but they remain alive waiting for their environment to change so that they might do so. If the water content rises above this amount they will grow and produce carbon dioxide and alcohol and undesirable odors and flavors. The yeasts that live in honey are not the same as those we use to make bread and alcoholic beverages. Honey yeasts are called osmophilic yeasts and are not suitable for making honey wine or beer.

There are two primary sugars in honey - glucose and fructose. When honey granulates only the glucose crystallizes and forms a latticework within the honey that traps the water and the fructose. There can be some water in the glucose crystal but only a maximum of 9.09 percent, which is only half of the moisture content of normal honey. Thus, the liquid portion of the crystallized honey that surrounds the glucose crystals may rise to 19 percent or more when granulation occurs. And, even though the crystallized honey can be rock hard it is still half-liquid and it is in this liquid portion that the fermentation may take place. Honey that is to be crystallized must be pasteurized to kill the yeast cells

or it may ferment on the grocery store shelf. The carbon dioxide gas that is produced during fermentation may create such pressure as to cause the honey to leak from the container. Fermentation is usually the cause of leaking jars of honey on a grocery shelf.

The late Professor Gordon Townsend of Guelph University (1939) studied the time and temperatures required to kill the yeast cells in honey. It was he who found that it is necessary to heat the honey to 140°F for 30 minutes or 160°F for one minute or some gradient between these two to kill the yeast cells. Nothing less will do the trick. Unfortunately, dark honeys, that is those that contain a great deal of protein, are easily burned at these higher temperatures. This has led some people to think that only light colored honey should be used to make crystallized honey. Unfortunately, it has also caused other people to suggest a lower pasteurization temperature, which is not practical and may lead to fermentation and disaster. Because the glucose crystals are white the granulated honey appears to be lighter in color than the original liquid honey.

Spreadability

Newly granulated honey is often so hard that it will not spread. It should be kept at room temperature for several days during which time it will slump and become spreadable. A problem during the warm part of the year is that the crystallized honey may become too warm and be runny, like liquid honey. Placing such honey in a refrigerator will not cause it to become firm again and there is nothing one can do to return the product to its firm and crystallized state.

During the warmer parts of the year it is best to lower the moisture content of the honey to be crystallized, most packers aim at using 17.5 percent moisture for summertime and 18 percent for winter.

They usually do so by blending various honeys with different moisture contents. Honey that contains only 16 to 17 percent water should not be used to make granulated honey as it will be too hard to spread.

Most grocery stores today air condition their buildings in the summer but my experience is that this is often not enough to keep high moisture crystallized honey in good condition. It is also a fact that in the summer, warm trucks and warm warehouses may allow the temperature of the honey to go too high and cause it to partially or wholly liquefy.

Seed crystals

Crystals must have a surface (nucleus) on which to grow. The temperatures required to kill yeast cells are high enough to also destroy the crystal nuclei that may cause honey to granulate. Those who pack liquid honey in jars for the retail trade hope to keep their honey liquid for at least six months and thus they heat their honey both to pasteurize it and to destroy the crystal nuclei that are present. The period of time a jar of honey remains liquid is called its shelf life. Unfortunately, many honey users think that a jar of partially granulated honey is spoiled, which is not true, as heating it will return it to its liquid state.

To make granulated honey with a fine grain it is necessary to add seed crystals. This is done by grinding and fracturing the crystals in already granulated honey. However, there is an important consideration that is often overlooked. The crystallized honey that is to be ground to make seed crystals must be firm and hard and must not have been allowed to slump. When honey slumps the sharp crystal edges become rounded and lose their sharpness so the new crystals will not grow on them. It has been written that you may use already made crystallized honey from a grocery store for seed. This will work if

the product has not been allowed to slump and soften.

How much seed to add?

It is usually suggested that the amount of seed honey that is used should be about ten percent of the total volume. However, if you have a high quality seed, that is crystallized honey that has not been allowed to warm and slump before it is ground, you may use even less. Some grinders work better than others. In the laboratory, and under the best of conditions, we can use as little as one-percent seed. This means, of course, that a crystal in the original crystallized honey that is used as seed is broken into at least 100 parts.

Foam

There should not be a layer of white foam on the top of any crystallized honey. The foam is not harmful but it is unsightly. It is formed as a result of air bubbles rising to the surface while the honey is cooling. Bees don't put air bubbles into honey! The air that causes the foam is put there by the beekeeper. It is there as a result of too much stirring when the seed honey is added, running a honey pump too fast so it sucks in air, or some similar event.

The best way to avoid foam is to not put it there in the first place. Check all of your equipment to eliminate places air bubbles might enter. Honey pumps should be run slowly, usually less than about 150 revolutions per minute. It is also important to mix the seed into the honey at as low a temperature as is possible so that any air that is present is trapped in the honey. You may also turn the newly packaged crystallized honey upside-down in the cold room and in this case the air bubbles are trapped on the bottom of the container when it is turned rightsideup.

One company that produces crystallized honey puts the newly seeded honey in a

large container when it first starts to granulate. Before it becomes firm it is homogenized and then packed. This is not easy and requires special machinery, as the honey is stiff and moves slowly. Those considering making granulated honey might buy and examine the product that is made by Sioux Bee and which is widely distributed in this country. In my opinion it is an excellent, high quality pack with no foam on top.

Another method of ridding the honey of at least some foam is to allow the honey in a bulk tank to sit and settle for several hours after the seed has been added. This will allow some of the air an opportunity to rise to the surface where it may be skimmed off.

Packaging

When honey granulates it shrinks a very small amount. If crystallized honey is packed in clear glass it may pull away from the side of the glass leaving a very small air space between the honey and the glass. This exposes some of the glucose crystals that are on the surface of the side of the package. These crystals are white and not honey-colored. Because they are different customers sometimes wonder what is taking place. Unfortunately, a few people have thought the white crystals was mold, which, of course, it is not. However, we get around this potential problem by packing the crystallized honey in opaque glass or plastic containers. If a clear glass container is used you may use a label that wraps all around the package but this may not fully do the trick.

The Dyce process

Professor E. J. Dyce, originally from Guelph University and later Professor of Apiculture at Cornell University, studied honey granulation when he was a graduate student starting in 1929. He later patented the process, which is described here (U. S. Patent 1,987,893 dated January 1935). The

patent has expired so that the method may be used by anyone. Dyce wrote only a few papers about the process, probably the best one is that published in the book on honey edited by Eva Crane and is cited below. I wrote a detailed report in 1983 about the process that is also listed below.

References

Dyce, E. J. *Producing finely granulated or creamed honey*, in *Honey: A Comprehensive Survey*. E. Crane, Editor. Heinemann: London. 1975.

Morse, R. A. *The Dyce process for making crystallized honey*. *Gleanings in Bee Culture* 111:441-442. 1983.

Townsend, G. F. *Time and temperature in relation to the destruction of sugar-tolerant yeasts in honey*. *Journal of Economic Entomology* 32: 650-654. 1939.

QUEEN INTRODUCTION

Joseph Latshaw

How many beekeepers have received a new queen in the mail only to realize that their work has just begun? Each year thousands of beekeepers find themselves in such a predicament. A new queen arrives in the mail, and now you must make a split or find and remove the old queen to make room for the new queen. Well, here are some of the basics for requeening and queen introduction based upon our experiences.

What is the best time of year to requeen? There are many suggestions as to when is the best time to requeen, and as with any beekeeping question, ask 10 different people and you will likely receive 10 different answers. However, there are a few guidelines that may help you to make a decision. Spring is always a beautiful and productive time of year for beekeepers and bees alike. Commercial queen producers are in full production, ready to meet your

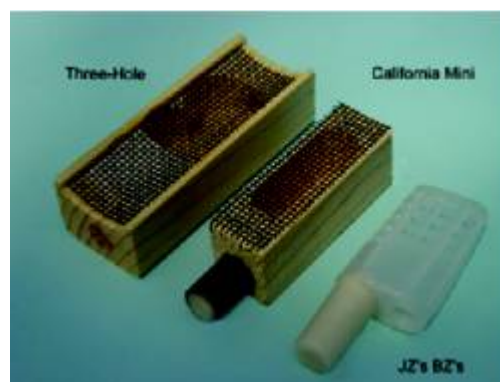
requeening needs. Some of the benefits to Spring requeening include queen availability, many producers are able to ship this time of year; small colony size, most colonies are at their smallest size early in the Spring which makes finding queens a little easier; and finally conditions are very favorable for queen introduction as the new queen will have plenty of support for her new offspring.

Availability is an important issue to consider. While your schedule is important, you must also consider when you can obtain queens in your area. Many queen producers begin grafting in late February or early March. It takes approximately 24 days from the time a queen producer grafts until mated queens will be available for shipping. Keep in mind this process may be delayed due to poor weather conditions, so plan on a reasonable time to receive your queens. If you order your queens too early, you may be faced with a situation of poor weather conditions in your local area when it comes time to introduce your new queen. Finding queens in a Spring snow storm is not an enjoyable task!

Finding queens can be a challenging task, so why not minimize the trouble? In the Spring and early Summer, the colony population is often less than what you might expect in the Fall. In addition, the colony is quickly replacing the old Winter bees with a healthy crop of young bees. This is not a critical point, but consider your queen finding skills, the fewer bees you have to search through, the better. A helpful suggestion for locating queens in large colonies is to take a couple of queen excluders and place them between the various boxes about a week before you will need to locate the queen, if you allow your queens to run in more than one box. This way, you only have to search for the queen in the box that contains the eggs and larvae when you return to locate the

existing queen. If the searching fails, you may wish to resort to extreme measures such as shaking the bees from the box containing the eggs and young larvae through a queen excluder. Place a queen excluder over the top of the hive and place an empty box on top of the excluder, so you will have something to shake the bees into. If all goes well, most of the bees will move through the excluder down into the colony and the queen will be found crawling around on the excluder or in the empty box.

Now that you have decided on a time of year to requeen and have worked out a plan to locate the existing queen, what do you do about introducing the new queen when she arrives? There are three main



types of cages that come to mind when I think of purchasing queens through the mail, the traditional three-hole cage, California mini cage, and JZ's BZ's plastic cage.

The photographs indicate the position that we use to introduce the queens into their new colony. Two suggestions that apply to nearly every style of introduction are to always place the candy end up and place the queen cage in an area that is well supplied with bees, preferably between two brood frames. The reason for placing the candy end up is to prevent any dead attendants from sticking to the candy, which may restrict the access of the surviving attendants and the queen to the candy. One or more of the attendants in the

queen cage may die, and if the candy end is placed down, the dead attendants will fall to the candy end of the cage and cover the candy.

When it comes time to place the queen cage in the new colony, some beekeepers suggest poking a hole through the candy using a small nail or wire. If the candy is fresh, I do not see any need for this step. I actually suggest that you place the new queen in the colony with the candy end covered, or protected from the bees in the colony. Give the bees 2-3 days to get acquainted with each other, then come back and remove the cork or other covering from the candy end of the cage. The bees will then chew through the candy and release the new queen. The reason for the extended release period is that with some of the new cage designs, the bees are able to chew through the candy in twenty-four hours or so, which in my opinion, is not enough time for the queen to become acquainted with her new colony. When you come back to remove the cork or other covering, you may also want to check for and remove any queen cells the bees may have begun to construct.

After removing the cork and checking for queen cells, let the colony rest for a week. This will give the new queen time to get out and begin her egg laying duties. It will also give the colony time to readjust and get back into its routine. When you come back after a week has passed you do not necessarily need to find the new queen, but you will want to be sure to verify that there are plenty of new eggs in the combs.

Hopefully this will provide you with a few helpful tips the next time you decide to requeen one or more of your colonies. Remember, there are many successful ways to requeen a colony if you follow a few simple guidelines to ensure that it is in fact a success. Good luck and happy beekeeping.

Joe Latshaw operates Ohio Queen Breeders in Columbus, OH, and has successfully introduced thousands of queens.

A TIME FOR EVERY SEASON THE EGG LAYING CYCLE OF A QUEEN HONEY BEE

by **Michael Burgett**

Oregon is not tropical! This statement can hardly come as a surprise. One of the many environmental classifications for Oregon is that it has a temperate climate, which means we experience defined seasons, with major temperature and precipitation variations between seasons. We should therefore expect that the “behavior” of a honey bee colony will not be the same in summer as it is in winter, in spring as it is in fall.

One reflection of the cycle of the bee year is seen in the number of eggs a queen honey bee will produce on a monthly basis. A queen honey bee has two primary functions in a colony: 1) to produce the necessary pheromones that promote what scientists sometimes call “social adhesion” and, 2) to produce the eggs necessary to maintain the adult bee population. In her lifetime a queen will produce about one-half million eggs, and these eggs are normally laid over a two-year life span. Yes, certainly, queens can live longer than two years, but the average life span, which really means egg laying duration, works out to be about 24 months.

About seven years ago I had a graduate student working on a Masters degree and we decided that a good “problem” for him to investigate was the seasonal variation in queen egg laying. So he set about to do this. How does one accurately count the number of eggs a queen produces? His method was to establish four-frame observation colonies and visually observe queens for 15 minute periods throughout

the day, counting each egg as she deposited it in a cell. In this manner he was able to compute the average number of eggs laid in a 15 minute period for that given day and thereby calculate the average number of eggs per day. By repeating this with multiple observation colonies, through several calendar years, he was able to accurately describe the egg production cycle as observed in the mid-Willamette Valley.

The figure that accompanies this article is the summary of his work. It is a fascinating visual that has much to teach us. One of the most obvious features is the cyclic nature of egg laying, peaking in the late spring and then declining to a low in November and December, thereafter climbing again. A second observation is that the queen produces eggs every month, obviously with some big differences between months, but no complete cessation of egg laying. This is a little contrary to what many text books tell us, which is that queens supposedly have a short period of no egg laying; such is not the case, at least in western Oregon, with its relatively mild climate that is moderated by the nearness of the Pacific Ocean.

His work also tells us how important late winter/early spring management is to the future productivity of a colony. The steepest increase in the egg laying cycle takes place from January through April, which translates to the period of greatest colony growth. This is the time when a queen requires an adequate brood nest within which to place her eggs. This emphasizes why reversing brood chambers (supers) is so important in early March because it allows a queen to continue her egg laying uninterrupted. The natural pattern of queen oviposition (egg laying) is in an upward spiral, and by early to mid-March queens are normally found “upstairs” in a hive and they will

slowdown their egg laying when the upper brood chamber becomes congested. The colonies look to have two brood chambers (hive bodies), but the biological reality is that the queen and her brood nest are “confined” to the upper chamber.

It is important not to place too much emphasis on the actual number of eggs laid per month as shown in figure 1. Please remember that for this research the queens were limited to four deep combs in a vertical configuration. A well drawn deep comb (both sides) will have about 7,000 cells. This, multiplied by four, gives a total cell count of 28,000 for the experimental observation hives. If all cells were available to a queen during the peak egg laying period, this would represent about four weeks of “available” space and she could produce eggs at a “standard” rate of about 1,000 per day. (Actually in the “perfect” hive, with “perfect” queen laying patterns, 21,000 available cells would be enough to support a colony). Such is never the case especially with observation colonies which are vertical slices of a normal hive. Observation hives do not possess multiple combs in the horizontal plane. For the four-frame observation hives used in these trials, a practical estimate of actual cells available for a queen to lay in would be around 14,000. This would mean a queen would be restricted to an egg production of about 500 to 600 per day, and that is just about what the “average” queen depicted in figure 1 achieved in May, the month of highest egg production. This also suggests to us that a deep hive body with 9 or ten combs, if efficiently used by the queen, will nicely accommodate the space requirement necessary for optimal egg laying. But by the nature of the combs, and because of individual differences between queens, it is wise for the beekeeper to provide two deep chambers to insure adequate space for egg laying.

Washington State Beekeepers Association

The WSBA will be having a joint meeting with Oregon at Hood River, Oregon Nov. 6-8, 2003. This is a great time and you can learn a lot from all the experts that attend the meeting and give talks. A combined meeting only every 2 years.

Association Officers

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IEBA Meeting and Event Schedule

January 10, 2003	IEBA Meeting Program-Organizational Meeting
February 14, 2003	IEBA Meeting Program-What to do with those weak hives in the fall-Nuc wintering
March 1, 2003	WSBA Meeting in Ellensburg, 10:00 AM at the Cattlemen's Club
March 14, 2003	IEBA Meeting Program-Jan Dormaier-Honey Bee Diseases-Meeting starts at 6:30
April 11, 2003	IEBA Meeting Program-Package Bees, feeders, Nuc's
May 9, 2003	IEBA Meeting Program-Making Mead
June 6,7, 2003	WSBA Meeting Program-Visit of WSU program and facilities
June 13, 2003	IEBA Meeting Program-Comb Honey and old combs and foundation
July 11, 2003	IEBA Meeting Program-Fall requeening-watching for bad queens
August 17, 2003	IEBA Summer Picnic
August 20-24, 2003	North Idaho State in Coeur D'Alene

September 4, 2003	Meeting will be at the Fair Ground on Thursday night
September 5-14, 2003	Spokane Interstate Fair
October 10, 2003	IEBA Meeting Program-Packing hives for winter
November 6-8, 2003	WSBA State Convention Joint Meeting with Oregon
November 14, 2003	IEBA Meeting Program-Thanksgiving Potluck
December 12, 2003	IEBA Meeting Program-Catered Christmas dinner Election of Officers
January 9, 2003	IEBA Meeting Program-

- Place “wet” extracted supers on top of the hive for cleanup by the bees.
- Keep grass and weeds cut down all around the hives.
- Check your yellow jacket traps regularly.
- Make sure water is available for the bees use from now through October.

Hive Care Calendar

For the month of August

August begins the honey harvest.

- Inspect once for congestion, queenright, diseases, mites, stress and stores.
- Remove supers containing well-ripened honey to extract.
- Examine supers frequently, but don’t leave many empty frames on hives where stores are small. You want to encourage the bees to buildup their winter stores.
- Don’t tempt robber bees with exposed honey.
- Remove the queen excluder.
- Put in entrance reducers to decrease area needing protection from mice and yellowjackets.
- Re-queen any colony with undesirable traits like poor production, mean tempers, poor brood pattern, etc.
- Apply all appropriate medications.
- Make sure the bees have a good supply of water.
- Keep your yellowjacket traps well maintained.
- Savor the harvest!

Hive Care Calendar

For the month of July

By July the main honey flow should be in full force.

- Inspect once for congestion, queenright, diseases, mites and stress.
- Continue to add empty supers and take off full ones. Multiple harvesting and extracting sometimes results in greater production. Moreover, you can often get a lighter honey early in the season which is good for creamed honey.
- By the end of the month your main crop of surplus honey should be in.

Hive Care Calendar

For the month of October

- Check for winter stores.
- Make sure the hive is vented. Many people use two 16-penny nails in opposite corners of the hive lid.
- Medicate with Fumidil B for nosema

- Keep the entrance reducer in.
- If you plan to insulate your hives for the winter you can do so now.
- Prepare your honey for sale.
- Begin inventorying winter repair jobs on hive parts.

FOR SALE

-Looking for board ends in pine or cedar. Or maybe some bee supers, bottom boards and other items. Contact Leo Berchtold at 208-687-1300.

-I have the following items for sale.
Smoker \$10.00. Hat and veil \$10.00.
Small bee gloves \$5.00. 10 supers with frames \$5.00 each.
Don Niles at 928-3616

-Telescoping cover \$6, Inner cover \$3,
Wood Bound QE \$3, Frame Feeder \$1,
Hive body w/unused fr \$5, 7 5/8 Super w/unused fr \$4, Hive scale \$120, Honey Pump w 1 HP motor \$300, SS Extractor 20 fr Maxant Series 500 \$1000, 15 Gal SS Water Jacket Uncapping Tank \$275, 2 ea 60 Gal ss Tank w valve \$130 and 2 baffle 30 Gal Sump \$105

Call Jim McAcam, 509-276-2386