

# BEGINNERS' BOX

*From Cameron Crane, Liberty County Beekeepers*

It has been so wonderful seeing all the new people taking an interest in Beekeeping. We are seeing lots of new faces at meetings in the Houston area. I was attending a meeting where they were talking about where to get bees. Someone asked, "What kind of bees are they?"; and the reply from someone was, "I don't know. They are honey bees." A little later in discussions, a newcomer asked, "What's the difference in the different kinds of bees?" I found the answer that one of the members supplied a little disappointing. It was, "It's about how mean they are and how much honey they produce." For anyone who has looked into the different races of honey bees, there is much more to it than just temperament and honey production. Although these are amongst the most important traits for the beekeeper, many other traits affect the handling, management and survivability of hives.

In Europe, the Americas and Australia, the term "honey bee" means a bee of the species *A. mellifera*. Within the species, there are sub-species and sub-sub-species also known as breeds, races or stocks. The old races of centuries ago were lineages that had adapted to different regions, climate, and available hive locations. If you would like a more thorough explanation, see: [http://en.wikipedia.org/wiki/Honey\\_bee\\_race](http://en.wikipedia.org/wiki/Honey_bee_race)

Before the invention of removable frame hives, beekeepers typically kept bees in skeps and would kill the hive to harvest the honey and wax. The old time beekeeper would select which skeps they were going to keep for the next year and which ones to harvest. Selection for the following years' stock was based on the honey bee traits the beekeeper liked. Italian beekeepers had a high liking for gentleness; and thus, the Italian bees are known for their gentleness. Some of the original honey bee races included Italian, Carniolan, Cordovan, Caucasian, and Nigra- black bee. In the last 200 years as travel increased and transportation improved, beekeepers moved with their pure, imported honey bees into areas that may have had other imported stock and feral honey bees. These bees would breed with each other. In current times, some beekeepers work hard to maintain purer lineages through isolated mating yards.

Little was known about the life cycle and habits of honey bees before the studies by the Swiss naturalist Francois Huber (1750-1831.) Huber's investigations laid the foundation for scientific knowledge of honey bees and started a significant movement in the 1800's to better understand, control, and breed honey bees.

Selective breeding looks for many different desirable traits for which to breed. Typically, beekeepers breed for gentleness, spring build up, honey production, fall size reduction, lack of robbing behavior, wintering hardiness, drone production level, and excessive swarming. Before the 1900's, higher swarming tendencies was a sought after trait because catching swarms was the way to increase the number of hives. After the advent of the removable frame hives, honey bees that made less propolis and swarmed less became desirable traits. However, all of these traits have advantages to the bees and/or the beekeeper. No race or mixture of races has a perfect balance of desirable traits. The Italian is a very gentle bee but is much more prone to robbing honey out of weaker hives. Northern beekeepers are more concerned about winter hardiness where those of us in the South are not since we don't have long, harsh winters. Selecting or breeding bees that produce less propolis makes it easier for the beekeeper to work their hives. But, the purpose and function of propolis is to help keep the hive healthy, so does breeding for honey bees that make less propolis hinder the healthiness of the hive?

To my knowledge, the first person to conduct in-depth studies into breeding bees for desired traits was Brother Adam (Karl Kehrle 1898-1996) at Buckfast Abbey located in Devon, England. At the time, tracheal mites were killing hives by the thousands in the British Isles. Few hives were surviving; and in 1916, only 16 hives were left at Buckfast Abbey. Brother Adam started breeding for pest resistance. His is an interesting story to read: [http://en.wikipedia.org/wiki/Buckfast\\_bee](http://en.wikipedia.org/wiki/Buckfast_bee)

Since Brother Adam's success, breeding honey bees has taken new directions which brought about a whole new set of traits that breeders target such as resistance to tracheal mites, nosema, American foul brood, chalk brood, and European foul brood. Another harmful pest first found in the United States in 1987 is the varroa mite. They have had a major impact on both feral and kept bees. Since 1997, The USDA Honey Bee Breeding, Genetics & Physiology Laboratory in Baton Rouge, LA has conducted very promising studies in breeding bees to combat varroa mites. The lab imported Russian honey bees for their varroa resistance. They found that some bee colonies had mite populations that only grew slowly. The study also found that the bees in these hives had a hereditary trait that kept the mite population in check. This trait was found to be hygienic and was eventually named the Varroa Sensitive Hygiene (VSH) trait. VSH is an activity of adult bees to detect and remove pupae (capped brood) that are infected with mites. The VSH trait has been successfully bred into many different races maintaining a relatively good mite resistance while still developing other desired characteristics like honey production, brood build up, and reduced swarming.

Many new beekeepers want to know what is the best type of bee to get. There is no clear answer or best choice for everyone. Thus comes one of my common statements about beekeeping which is beekeeping is about choices. I've read that newer beekeepers should try a few different types of honey bees. I won't disagree. It is my feeling that first time beekeepers should start with a gentle bee. I've seen several people get out of beekeeping because they did not enjoy dealing with temperamental or more aggressive bees. Having acquired a fair number of hives from swarms and from bee removals, I've dealt with more than enough mean bees (Africanized.)

There are a growing number of hobbyist beekeepers choosing to keep bees chemical free. This can be a more challenging a choice. I highly recommend that if you are going to practice chemical free beekeeping, get bees with more resistance to diseases and pests. Keep in mind you'll still need to stay on top of IPM (Integrated Pest Management). I also think you are going to have an easier time working with bees that are bred and accustomed to your own climate.

What are my experiences with some of the different races? A few years ago, I got three hives of supposedly "Russian" bees. These first Russians were mostly calm enough, but they do love to propolis EVERYTHING up thick! By the end of the first major flow, I'd named the hives "the weak", "the medium", and "the strong." The strong has been split every year, and each split built back up quickly and remained strong. The medium has remained medium and is still holding on as a double deep but yet to ever fill a super for me. The weak hive would never move up into a second deep and died this past winter. All three had their times when they were not happy about me opening the hive. Last year and again this year, I bought some more Russians as nucs but this time from a source that was breeding from Russian queens purchased from the Russian Honey Bee Breeder Association. This better, true source of Russians still propolised quite a bit but not near as bad. They also were not as temperamental as often and have all been good producers.

Mid-spring this year, I added to my main apiary five packages of Minnesota Hygienic bees bought in Texas. I'm amazed at how calm they are ALL THE TIME. When I go into those hives, I do not smoke them, I only give them a little squirt of sugar water. They built fast, and three of the five hives of the Minnesota Hygienics actually filled some supers this first year. We are already planning to add more of these. I know a few hobbyist beekeepers who keep some rather aggressive bees. They tell me it's because meaner bees produce better. My experiences has me doubting there is any truth to this; and if so, is it really worth the extra hassles? My short time of experience with these Minn. Hygienic bees has me convinced it's bunk, but I'll hold my final judgment until I see how they come out of this coming winter and into the spring. Remember: Beekeeping is about Choices – Your mileage may vary.

## Honey Bee Races (BREEDS)

**Italian:** *Apis mellifera ligustica* - First brought to the U.S. in 1859. A favored bee stock in the US. There are light colored strains and darker/leathery colored strains. The light colored strain exhibit more of the weaknesses of the Italians and more susceptible to tracheal mites. The darker line is shown to be very resilient against tracheal mites. This likely explains way my research shows disease resistance as a strength in some places; and in others, it lists susceptibility to diseases as a weakness. So, I did not included either in the below list of strengths and weaknesses. Italians' strong brood rearing is a great advantage at times but is also a drawback in nectar dearths and in the winter where they consume more honey stores.

**Strengths:** Very calm, non-aggressive bee, excellent honey producers, light coloring has aesthetic appeal to many beekeepers despite the drawbacks of the light colored Italians, reluctance to swarm, zeal for building comb, white honey-cappings, a willingness to enter supers, cleanliness (good housekeepers), uses little propolis, and a strong disposition to breeding, and very prolific.

**Weaknesses:** Prolonged brood rearing/inclined to excessive brood rearing, high consumption of stores thus may consume surplus honey if supers are not removed immediately after the honey flow stops, known for their tendency to rob honey from weaker hives which can also increase spread of disease, tendency to drift (bees joining other hives) which is caused by a poor sense of orientation, tends to forage over shorter distances (less effective in poorer nectar flows like our Texas summers.)

**Cordovan** - A genetic trait, usually found in the Italian race. Due to the wide variance in color, Cordovans are used mainly for tracking genetic makeup.

**Strengths:** Usually found in strains of Italian honey bees, attractive coloration makes queen location easier, superb comb builders, very gentle, coloration trait is useful in breeding programs, Cordovan trait may be bred into any race of honey bee, Cordovans are available in the US.

**Weaknesses:** Consume large amounts of food in winter, Italian Cordovans may perform poorly in cold, wet conditions, Cordovan trait is recessive.

**Carniolan** *Apis mellifera carnica* - Native to Slovenia, southern Austria, and parts of Croatia, Bosnia and Herzegovina, Serbia, Hungary, Romania, and Bulgaria. Also known as the Grey bee.

**Strengths:** Considered to be gentle, sense of orientation better than the Italians, less drifting of bees from one hive to a neighboring hive, not as prone to rob honey as Italians, overwinter in smaller numbers, quickly adapt to changes in the environment, increase/decrease brood rearing quickly based on nectar flows, low use of propolis, resistant to brood diseases, workers live up to 12% longer than other breeds, early morning foragers that will forage on cooler and wetter days than other breeds, creates less brace and burr comb.

**Weaknesses:** More prone to swarming if overcrowded, low ability to thrive in hot summer weather, Unless marked the dark queen is difficult to find, brood rearing diminishes greatly when pollen is scarce.

**European Dark Bee** (AKA black bee or German bee) *Apis mellifera mellifera* - Originally distributed in some parts of central, western and northern Europe. These were the first bees brought to the Americas around 1600. This distinctly marked bee is brown and black in color and overwinters well. Recent genetic testing shows many feral bees populations that maintain a genetic marker of the black bee, but most of the purer stock has been eliminated by pests and disease in the last several decades.

**Strengths:** Overwinters well, decent yield even in poor years, needs very moderate food supplies.

**Weaknesses:** Slow Spring build up, more aggressive than other preferred breeds, not sold in the US.

**Caucasian** *Apis mellifera caucasica* - Originates from the high valleys of the Central Caucasus. Georgia is the "central homeland" for the species, although the bees also can be found in eastern Turkey, Armenia and Azerbaijan. Purebreds hard to find in the US.

**Strengths:** Gentle and calm, ardent brood production - raising strong colonies, colonies reach full strength in mid-summer (good for areas where the highest nectar flow is in mid-summer), very heavy use of propolis, a longer proboscis can reach nectar other honey bees can't, low swarming instinct, quick fall size reduction.

**Weaknesses:** Colonies do not reach full strength until mid-summer (not good for Texas where the highest nectar flow in the spring), the heavy use of propolis may be seen as undesirable as it makes hive management more difficult, frames and hive boxes are glued together more substantially, over wintering in northern climates not good due to susceptibility to nosema, inclined to drifting and robbing.

**Buckfast:** Developed by Brother Adam at Buckfast Abbey (see ref. in first page of this article.)

**Strengths:** Highly tracheal mite tolerant, extremely gentle, low swarm instinct, over-winters exceptionally well, well suited to cool, wet climates, good honey producer, prolific queens (lay many eggs), frugal - low amount of brood during fall (uses less honey stores during winter), packs brood nest with honey for good wintering, curtails egg laying during dearths, low incidence of chalk brood and wax moths due to good house cleaning techniques, very hygienic, build-up rapidly once started, produces little propolis/brace comb, does well in cold/wet springs.

**Weaknesses:** Not widely available, slow spring build-up, poor early spring pollinators, low amount of brood during fall, less honey or pollen due to erratic spring weather conditions.

**Russian:** Originated in the Primorsky Krai region of Russia. Controlled in the U. S. by the Russian Honey Bee Breeders Association who work hard at maintaining purity and diversity of the stock.

**Strengths:** Strong resistance to varroa and tracheal mites, higher use of propolis. Russian breeders are selecting breeder queen first for varroa resistance and then for honey production.

I found little information listing strengths and weaknesses of Russians. My personal experiences are they survive well without chemical treatment. I would not classify them as mean bees; but at times, they have been testy or moody. I handle them with extra gentleness and don't go into the hives too early or late in the day or on poor weather days (good practices for all honey bees.)

**Minnesota Hygienic, VSH and other modern breeds.** I did not find much information about the newer breeds to be able to present a proper list of strengths and weaknesses. Many seem to maintain traits of the sub-species they were bred from. Most of the reputable bee suppliers will have information about the characteristics of their bees. I'll close with some notes on some of the newer options:

The Minnesota Hygienic stock has been selected for its exceptional house cleaning ability, significantly reducing the negative effects of most brood diseases. The VSH stock is not an independently viable stock on its own (because of inbreeding), the VSH/SMR (suppressed mite reproduction) trait has been incorporated into other genetic stocks so that these stocks may also express this highly desired characteristic. The Cordovan bee is a type of Italian bee that has a very light yellow color, which is more attractive to many beekeepers.

Numerous hybrid stocks are also available commercially: The Midnight bee was developed by crossing the Caucasian and Carniolan stocks, hoping to maintain the extreme gentleness of both strains while removing the excessive propolis of the Caucasians and minimizing the swarming propensity of the Carniolans. The Starline was developed from numerous strains of the Italian stock by Gladstone Cale of the Dadant Bee Company. It was once favored by commercial beekeepers because of its tremendous honey yields, particularly in clover, but the popularity of this stock has declined in recent decades. The Double Hybrid is a cross of the Midnight and the Starline. The "Smart" strains are crosses between the SMR strain and other stocks, such as Italian, Russian, and Carniolan. The "All-American" from RWeaver is based on the darker Italian stocks. The "BeeWeaver" strain has been raised chemical free since 2001, selecting from stocks that showed strong resistance to varroa mites.

**Conclusion:** There is a lot of variation between races and the different strains bred from those races. These differences give each advantages and disadvantages. Beekeepers should choose which ones fit their needs best. Experience some of the available breeds and decide which is best for you. Remember:  
Beekeeping is about Making Choices.

Joyful Beekeeping,

Cameron Crane