



# RUSSIAN HONEY BEES

By Ted W Swenson

- Introduction
- How Did They Get Here
- Characteristics:
  - Spring Buildup
  - Swarming
  - 'Just in Case Queen Cells'
  - Invisible Queens
  - Hygienic Behavior
  - Varroa Mites
  - Tracheal Mite Resistance
  - Nosema Resistance
  - Small Hive Beetle
  - Honey Production
  - Over-Wintering
  - Russian Queen Shutdown
- Basic Traits Comparison Chart
- The Future



WSBA Master Beekeepers Course  
Category #1



# THE RUSSIAN HONEY BEE

## INTRODUCTION:

What is a Russian Honey Bee? First off, it is not an Italian or a Carniolan but it does have several of their characteristics. Genetically, a Russian honey bee is Caucasian with some Italian and Carniolan lineage.<sup>1</sup> They are a dark bee with black abdomens with grey hair. Although they share some Carniolan and Italian characteristics, they definitely have their own “Russian” characteristics.

Russian queens have been available for use by everyday beekeepers since 2000. I purchased my first Russian queens in 2002. Since then I have steadily increased the number of Russians and in 2005 all of my hives were converted to Russian.

Why Russians? Some of my earliest frustrations with honey bees, Carniolan in my case, were 1) winter losses, 2) putting menthol in the hives to treat for trachea mites, and 3) seeing varroa mites crawling on my bees. After stumbling on an early article about Russian bees, I researched numerous Internet sites and the different journals, scouring for anything about them. The information was scarce but interesting. So my first Russian queens were ordered/received in 2002. The week they arrived is the week that they began to teach me what they liked and disliked.

---

<sup>1</sup> Brachmann, Bob, p20, Characteristics of Russian Bees, Bee Culture, Nov 2004.



The first thing you notice is their cost, higher than any other queen. I got over this hurdle by reasoning that no trachea mite treatment costs and reduced/no varroa treatment costs and lower winter losses equaled a good value. This is one of the few first year assumptions that turned out to be correct.

### HOW DID THEY GET HERE?

One hundred Russian Queens from Russia's Pacific coast, an area called the Primorsky Territory, were brought to the Honey Bee Breeding, Genetics, and Physiology Research Laboratory of the Agricultural Research Service (ARS) in Baton Rouge, Louisiana.<sup>2</sup> One of the geneticists responsible for this was Dr. Thomas E. Rinderer. After a three-year quarantine on Grande Terre Island, Louisiana, the queens were moved to apiaries at the ARS lab in Baton Rouge.<sup>3</sup> An additional 100 queens were brought to the U.S. each year for several more years. The ARS staff developed screening criteria that emphasized hygienic behavior and mite resistance and then honey production, winter hardiness, and gentleness. After extensive breeding and testing, some of the queens were transferred to a commercial beekeeper, Steven S. Bernard, and then Charlie Harper. Pure Russian breeder queens were produced and sold on a first come first served basis.<sup>4</sup> From these breeder/production queens, Russian Queens were produced for sale to any beekeeper. Each year additional queens were brought in, evaluated and then moved into the general population thereby increasing the gene pool of the Russian honey bees.

The number of "Russian" queen breeders has steadily expanded. In my opinion there are more than enough and we have reached a buyer beware situation. Due diligence in

---

<sup>2</sup> Suszkiw, Jan, p2, The Latest on Russian Bees, Bee Culture, Feb 2002

<sup>3</sup> Ibid

<sup>4</sup> Ibid



selecting a queen supplier is needed when beekeepers purchase Russian queens just as you would when purchasing Carniolan or Italian queens. Two important questions to ask are: do you have an open or closed breeding program and are the drone mother's also pure Russian?

### CHARACTERISTICS:

Russian bees have some traits or characteristics that are similar to Carniolans and/or Italians. They have numerous traits that are theirs alone. As the traits are discussed, I will highlight those that are discussed in articles in the journals and Internet sites and those that I have experienced and can confirm. I will discuss the characteristics, as one would experience them if you purchased a Russian Queen and received her in the month of May.



### Queen Introduction:

Russian queen introduction is difficult. Introducing a Russian Queen to a non-Russian colony is not easy and not fast but certainly possible.<sup>5</sup> It normally takes at least a week for a Russian Queen to be accepted by non-Russian, less than a week for Russian bees to accept a Russian Queen. The best way to introduce a Russian Queen is in a nuc. Place the queen in a cage where you control the release. The nuc should have brood and a frame feeder. The frames that you put in the nuc should predominately have young bees, not foragers. After a week, release the queen and watch carefully. Normally the Russian

---

<sup>5</sup> Tubbs et al, p 819, Commercial Management of ARS Russian Honey Bees, American Bee Journal, Oct 2003



Queen will quickly dive between the frames. If she has not been accepted, the workers will usually ball her fairly quickly. If so, rescue her and put her back in the cage. Just in case, before releasing the queen, inspect the frames for eggs to verify that there is not another queen in the nuc. Wait for 4-5 days and try to release again. I have experienced a Russian Queen release where the workers ignored her. She ran along the top bar and then dove down where there were few workers. She seemed to be OK. Five days later I found her on the floor of the nuc, dead. Now I watch to see some sort of interaction between the Russian Queen and the workers.

If the nuc is Russian, introducing a Russian Queen is usually faster. Put her in a cage, place her between two frames and wait for 5-6 days and inspect. Release and observe. Come back and inspect the nuc in 4-5 days and look for eggs to verify a successful introduction. It typically takes longer (up to 10 days) for introduced Russian Queens to begin laying eggs.<sup>6</sup>

Once successful, be ready to transfer the nuc to a deep. Russians build up fast. I have had 4 nucs swarm, all on the same day of course, due to congestion in the nuc. The watchwords for Russian Queen introduction are; be careful, take your time.

---

<sup>6</sup> Flottum, Kim, p 42, [Russian Bees, Look at the Numbers](#), Bee Culture, Dec 2003



Spring Buildup:

Normally, Russian hives winter with a small (some say very small) cluster. “Normal” is 3-4 frames, sometimes 2-3 frames. Your first winter with Russians can be nerve racking. You see these small clusters, sometimes about the size of a grapefruit, and become convinced that you are going to lose all of your hives.

Russians are excellent at over-wintering. They are frugal with their winter stores. Be ready for an explosive buildup. In a 2001 study of Russian honey bees, V. Kutznetzov et al. reported that the Russians are long-lived. “The last winter bees die a month later than the Italians.” This enhances spring build-up and honey production. A strong natural pollen flow seems to be the trigger that results in extensive brood development. Conversely, nectar and/or feeding syrup will not trigger growth without pollen.<sup>7</sup> Russian build-up is

similar if not faster than estimate their ability to You need to be ready with you wait too long, they early and high.



Italians. Do not underestimate their ability to explode in numbers. If you wait too long, they will swarm. The rule of thumb is super

Swarming:

Russians tend to swarm more than Carniolans and Italians. They start slow but when pollen and nectar become available the queen becomes very active. The workers draw out foundation quickly and the queen fills up the frames fast. As a result you may have up to 2,500 workers emerging each day. That is an explosion. “Beekeepers accustomed

<sup>7</sup> Tubbs, H. et al, p. 819, Commercial Management of ARS Russian Honey Bees, American Bee Journal, Oct 2003



to managing Italian honey bees will be tempted to underestimate the potential for Russian colonies to rather abruptly shift from small surviving colonies to large colonies needing space to prevent swarming.”<sup>8</sup> Also keep in mind that Russian Queens move throughout the hive. Honey on the top of brood frames is not a barrier to her. If she can not find open space, the hive will swarm. And with Russians, swarming is not delayed while the workers build swarm cells. Russians already have them.

#### “Just in Case” Queen Cells:

One of the most interesting traits of the Russians is their insistence on building and maintaining supercedure queen cells. They maintain these cells all season long. Although very different from other honey bees, it is actually a good survival trait. Should a hive lose its queen (e.g. yellow jackets or a beekeeper) the hive has a new queen already going as opposed to taking an egg and starting at day 1, 2 or 3. Best practice is to leave the queen cells alone, check for eggs. A queen getting ready to swarm will stop laying. I have found that the Russians will normally keep their queen cell in the upper third of the brood frame. If I see queen cells on the bottom of the frame I treat this as a hive about to swarm. The workers will occasionally tear down and move the “just in case queen cell”. They do not normally allow the new queen to mature unless the hive needs her.

---

<sup>8</sup> Tubbs, H. et al, p 819, Commercial Management of ARS Russian Honey Bees, American Bee Journal,



### Invisible Queens:

Russian honey bees tend to be dark. Russian Queens are also usually dark and often have striped markings. These ‘stripes’ are similar to tiger stripes, an uneven undulation across each abdomen segment. In addition several beekeepers report that the Russian/Russian queen is dark with light blond hairs and “the longest wings of any bees I have ever worked with”.<sup>9</sup> They seem to move around the frames more than Carniolans and Italians. There have been several reports that the Russian Queens move away from combs being worked by the beekeeper. When you inspect the hive, look for what the Russian Queens are doing or not doing. Trying to find the queen can be a large waste of time. When doing splits, it is usually best to separate the two deeps with a queen excluder. Come back in four days and check for eggs. Whichever deep has eggs in it also has the queen.

### Hygienic Behavior:

Hygienic behavior can have a positive impact on a colony’s ability to control *Varroa destructor* populations. The USDA-ARS bee lab in Baton Rouge compared Russian colonies to other domestic lines and found that Russians expressed strong hygienic behavior at a much higher level (69% vs. 37%).<sup>10</sup> In addition, it has been observed that in hives with screened bottom boards, Russian colonies showed *Varroa* mites with missing appendages and bite



<sup>9</sup> Harrison, Bob, 21<sup>st</sup> Century Beekeeping, American Bee Journal, Jan 2005.

<sup>10</sup> De Guzman, Rinderer, et al, Hygienic Behavior by Honey Bees From Far-eastern Russia, American Bee Journal, Jan 2002.



marks.<sup>11</sup> Numerous observations of Russian bees grooming themselves and each other have been reported. In addition, beekeepers with Russian colonies have noted how clean the bottom boards are even after the long winter months. This is all part of the Russian bee's hygienic behavior trait.

Varroa destructor Mites:

Russian honey bees are not immune to varroa mites. They have developed a resistance to varroa after several decades of exposure with little or no treatment while in Russia and now in the U.S. There have been numerous studies of Russian honey bee resistance to varroa mites.

In An Evaluation of ARS Russian Honey Bees ... Thomas Rinderer reports that:

“Russian honey bees had about half the number of varroa mites found in domestic colonies at the end of the experiment.

Russian colonies, as they have in previous experiments (Rinderer et al, 1999, 2001 a, b), reduced the growth of mite populations. The author's conclusions from this study state:

- 1) The resistance of Russian honey bees to *V. destructor* strongly reduces mite populations. Use of this or another resistant stock is central to an IPM approach to *V. destructor* control.
- 2) Formic acid reduced mite populations
- 3) Screened bottom boards did not interfere with the effectiveness of formic acid treatments.

Central to this study was their analysis, which showed that the treatment combination resulting in the lowest mite population growth was use of Russian colonies on screened bottom boards given a formic acid treatment.

---

<sup>11</sup> Brachmann, Bob, p 18, Characteristics of Russian Bees, Bee Culture, Nov 2004.



In Commercial Management of ARS Russian Honey Bees, H. Tubbs et al reports that:

Varroa mite populations build up in Russian colonies much more slowly. Also, when Russian colonies become highly infested, they will survive longer and allow more time to treat them. Once treated, they ‘bounce back’ very nicely.

Russian hives are normally broodless from late October to January in cold climates. This helps break the varroa reproduction cycle<sup>12</sup>, and exposes the adult varroa to the Russian hygienic trait. As a result, mite loads in Russian hives are very low through winter and going into spring. In the Washington area, queen shut-down for winter has been November through January. Normally the Russian queen will lay and maintain small brood patches from February up to pollen flow. At that point, she will quickly increase her laying rate.

#### Tracheal Mite Resistance:

Russian honey bees have excellent tracheal mite resistance. In Russian Bees, Another Story, Bob Harrison reports that he has tested his Russian bees for tracheal mites and would only find a tracheal mite in “maybe one of 30-50 samples”.<sup>13</sup>

#### Nosema Resistance:

V. Kutznetzov et al reported that Russian honey bees seem “non-disposed for *Nosema apis* (Microscopy investigation found none)”.<sup>14</sup> I have not seen any studies with regards to Russian honey bees and *Nosema ceranae*.

---

<sup>12</sup> Weaver, Bill, p. 947, The Webbs of Georgia, American Bee Journal, Dec 2003.

<sup>13</sup> Harrison, Bob, p52, Russian Bees, Another Story, Bee Culture, Jan, 2005.

<sup>14</sup> Kutznetzov et. al, Danish Observations on the Russian Bee, p. 203, American Bee Journal, Mar 2002.



### Small Hive Beetle:

There is not a lot of literature about Russian bees and the small hive beetle. One report from small hive beetle infested Georgia states Russian bees have been observed being “very aggressive” towards hive beetle larvae. Although the bees have difficulty grasping the adult beetle, they aggressively dug out beetle larvae from honey comb cells and removed them from the hive.<sup>15</sup> I have also heard of 150 Russian mating nucs being wiped out by small hive beetle. Beekeepers will need to use the same anti-hive beetle procedures for Russian bees that they would use for any other honey bee.

### Honey Production:

Initial reports (2000-2001) from some articles discussing Russian honey production indicated that it was below normal when compared with other types of honey bees. The weight of evidence now indicates that Russian honey production is as good if not better than other honey bees. In a 2003 article titled “Commercial Management of ARS Russian Honey Bees” four major beekeepers (H. Tubbs, C. Harper, M. Bigak, and S.J. Bernard) reported that they found Russian honey bees to be good honey producers, able to make good crops in good years and excellent crops in excellent years.<sup>16</sup>

In a different report, H. Tubbs reports average yields of 130 to 150 pounds per hive for Russian honey bees while his non-Russian bee’s yield was about 84 pounds per hive.<sup>17</sup>

---

<sup>15</sup> Weaver, Bill, The Webbs of Georgia, p. 947, American Bee Journal, Dec 2003.

<sup>16</sup> Tubbs, H. et al, Commercial Management of ARS Russian Honey Bees, p 819, American Bee Journal, Oct 2003.

<sup>17</sup> Suszkiw, Jan, The Latest on Russian Bees, p. 2, Bee Culture, Feb 2002.



One factor that may influence beekeepers that prefer to use queen excluders is that Russian honey bees “seem to go through the excluders more readily to store honey above them.”<sup>18</sup> This was observed by Carl Webb, a commercial beekeeper in Georgia who has converted his operation to all Russian. He also believes the Russian honey bees make the same amount of honey as other commercial bees.

My experience shows little difference in honey production between my Russians and my Carniolans. As each honey super is pulled from a hive, it is weighed and the data is recorded. At the end of the season I add up each hive’s production and identify the top five producers. These hives are then entered into the selection process for queen breeding. The last three years data shows both Russian and Carniolan hives in the top five.

#### Over-Wintering:

Over-wintering is one of the strongest traits the Russian honey bees have. Russian queens shut-down earlier than normal and Russian worker population drops to winter levels sooner. Throughout the cold weather months, Russians are very frugal. They do not consume as much winter stores as other bees.<sup>19</sup> It is not uncommon to open a Russian hive in early spring and find the cluster still in the bottom deep and the top deep’s ten frames are still full or nearly full of honey and pollen.

One of the reasons for this is that Russian winter cluster is small to very small. A typical early winter cluster is only 3-4 frames. Many Russian hives will come out of winter with only a two-frame cluster. Fewer bees, less winter store consumption.

---

<sup>18</sup> Weaver, Bill, The Webbs of Georgia, p. 947, American Bee Journal, Dec 2003.

<sup>19</sup> Tubbs et al, p. 819, Commercial Management of ARS Russian Honey Bees, American Bee Journal, Oct 2003.



Anecdotal reports indicate that Russian bees will not make cleansing flights unless the temperature is higher than that at which Carniolans and Italians will fly. This results in fewer bees that leave the hive and are unable to make it back. Kutznetzov et. al. reports that Russian honey bees are long lived. “The last winter bees die a month later than the Italians.”<sup>20</sup> Thomas Rinderer attributes Russian “superior winter survival to being highly resistant to tracheal mites, something that is still uncommon for standard commercial colonies”.<sup>21</sup> When you add all of these traits to the Russians being “non-disposed to nosema”<sup>22</sup> you have a bee that is well equipped to withstand long hard winters (just like in the Primorsky Territory where they came from).

Do not be too concerned about a 2-3 frame early spring cluster. The first four commercial beekeepers with Russian hives (H. Tubbs, C. Harper, M. Bigalk, and S.J. Bernard) report that “even colonies with as few as 2-3 frames of brood and bees are able to develop into strong colonies that will make a good crop”.<sup>23</sup>

#### Russian Queen Shut-down:

Russian queens will stop laying if there is a pollen or nectar dearth. In Eastern Washington it is not uncommon to have a pollen dearth between the dandelion bloom and the next bloom during the spring. Many Russian queens will shut down during this short period. It is not normally a failing queen, it’s a Russian thing. Do not try to replace her; just wait to see if she starts laying again when the pollen flow returns.

#### BASIC TRAITS COMPARISON CHART:

<sup>20</sup> Kutznetzov et. al, Danish Observations on the Russian Bee, p. 203, American Bee Journal, Mar 2002.

<sup>21</sup> Suszkiw, Jan, The Latest on Russian Bees, p. 2-3, Bee Culture, Feb 2002.

<sup>22</sup> Kutznetzov et. al, Danish Observations on the Russian Bee, p. 203, American Bee Journal, Mar 2002.

<sup>23</sup> Tubbs et al, p. 819, Commercial Management of ARS Russian Honey Bees, American Bee Journal, Oct 2003.



The following table shows comparisons between the Russians, Carniolans and Italians. These are generalizations, which may help beekeepers if they include Russian honeybees in their operations. This table has been expanded from the original, which first appeared in the November 2004 edition of Bee Culture.<sup>24</sup>

<p><b>Wintering Ability:</b> 1 = Best, 3 = Poorest</p> <ol style="list-style-type: none"> <li>1. Russian</li> <li>2. Carniolan</li> <li>3. Italian</li> </ol>	<p><b>Winter Honey Consumption:</b> 1 = Least, 3 = Most</p> <ol style="list-style-type: none"> <li>1. Russian</li> <li>2. Carniolan</li> <li>3. Italian</li> </ol>
<p><b>Spring Buildup:</b> 1 = Best, 3 = Poorest</p> <ol style="list-style-type: none"> <li>1. Italian</li> <li>2. Carniolan</li> <li>3. Russian</li> </ol>	<p><b>Speed of Buildup:</b> 1 = Best, 3 = Poorest</p> <ol style="list-style-type: none"> <li>1. Russian</li> <li>2. Carniolan</li> <li>3. Italian</li> </ol>
<p><b>Swarming:</b> 1 = Most, 3 = Least</p> <ol style="list-style-type: none"> <li>1. Russian</li> <li>2. Carniolan</li> <li>3. Italian</li> </ol>	<p><b>Bee Populations Throughout the Year:</b> 1 = Most, 3 = Least</p> <ol style="list-style-type: none"> <li>1. Italian</li> <li>2. Carniolan</li> <li>3. Russian</li> </ol>
<p><b>Tracheal Mite Resistance:</b> 1 = Best, 3 = Poorest</p> <ol style="list-style-type: none"> <li>1. Russian</li> <li>2. Carniolan</li> <li>3. Italian</li> </ol>	<p><b>Varroa Mite Resistance:</b> 1 = Best, 3 = Poorest</p> <ol style="list-style-type: none"> <li>1. Russian</li> <li>2. Carniolan</li> <li>3. Italian</li> </ol>

<sup>24</sup> Brachmann, Bob, p 18, Characteristics of Russian Bees, Bee Culture, Nov 2004.



### THE FUTURE:

The Russian honey bee is not a panacea. It is a very hardy and hygienic bee with numerous traits both good and not so good. Unless a new beekeeper attends a Russian honey bee oriented beginner's class, I would not recommend Russians for new beekeepers. The management techniques are just different enough to cause significant problems.

2009 will be the last year that the ARS Baron Rouge will be directly involved in the production and introduction of new lines of Russian Queens. In response to this, the Russian Queen Breeders Association has been formed. The association's mission is to maintain the current pure Russian queen lines and expand the gene pool of association members. Each member of the RQBA maintains two lines of Russian queens. Each year they evaluate, select, and produce 36 queens from each line and then send two of each line to the other 17 members. The 34 queens received from the other members will be used as drone mothers and to produce additional drone mothers. These drones will increase each member's gene pool each year. New queens are grafted from the line breeder queens and moved to mating yards near drone mother yards. After successful mating, the new queens are established and then evaluated for possible selection as breeder queens for the next year. The cycle then repeats.

Before deciding to add Russian honey bees to your operation you should do extensive research about the Russian bee. It is not for everyone but it does have a place in American beekeeping.



## References

- B. Brachmann, Characteristics of Russian Bees, Bee Culture, Nov 2004.
- C. Fassbinder-Orth, T Rinderer, A Study of Chalkbrood Susceptibility in Russian and Domestic Honey Bees, American Bee Journal, Aug 2005.
- De Guzman, Rinderer, et al, Hygienic Behavior by Honey Bees From Far-eastern Russia, American Bee Journal, Jan 2002.
- B. Harrison, SMR's and Russians, Bee Culture, Oct 2003.
- B. Harrison, Russian Bees, Another Story, Bee Culture, Jan 2005.
- B. Harrison, 21<sup>st</sup> Century Beekeeping, American Bee Journal, Jan 2005.
- K. Flottum, Russian Bees, Look at the Numbers, Bee Culture, Dec 2003.
- Kutznetzov et. al, Danish Observations on the Russian Bee, American Bee Journal, Mar 2002.
- T. Rinderer, L.I. De Guzman, G.T. Delatte, C. Harper, An Evaluation of ARS Russian Honey Bees in Combination with Other Methods for the Control of Varroa Mites, American Bee Journal, May 2003.
- T. Rinderer, L.I. De Guzman, J. Harris, V. Kuznetsov, G. Delatte, J.A. Stelzer, L. Beaman, The Release of ARS Russian Honey Bees, American Bee Journal, April 2000.
- J. Suszkiw, The Latest on Russian Bees, Bee Culture, Feb 2002.
- H. Tubbs, C. Harper, M. Bigalk, S.J. Bernard, G.T. Delatte, H.A. Sylvester, and T.E. Rinderer, Commercial Management of ARS Russian Honey Bees, American Bee Journal, Oct 2003.
- B. Weaver, The Webbs of Georgia, American Bee Journal, Dec 2003.