DOUBLE B
APIARY & FARM

HONEY BEE NUC INSTRUCTIONAL BOOKLET

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Thank You!

Thank you for purchasing a honey bee nuc from Double B Apiary. We assure your satisfaction with our product and wish you the best with starting your apiary. We realize when beginning beekeeping, it can be confusing on what to do, so we created a booklet for you with important information.

About Us:

What started out as a small summer job has blossomed into a full-fledged business. In the summer of 2016, the two young girls (Parker & Kennedy) worked together to start what would be the backbone of their business, selling the extra produce from their family garden. Eventually, this system was structured into weekly produce boxes for the members of the community.

With the garden needing to produce a large quantity of produce each summer, the girls decided to get two beehives to help pollinate their garden. The two had found their calling: Beekeeping. Their apiary quickly expanded to over 100 beehives within their first year.

Without support from their community, the girls could never accomplish what they have in such a short period of time. We thank each and every one of you from the bottom of our hearts.

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Nucleus Colony Installation Instructions

Congratulations on getting your nucleus colony from Double B Apiary & Farm! There are several ways to install nucs, but we found this way to be the easiest and simplest to explain for beginners.

Your hive equipment should be assembled and painted BEFORE the bees arrive so they can be installed without delay. Bees will do best if installed the same day (or the day after) you get home. Place your complete hive (hive stand, bottom board, deep box, and 3-5 frames (depending on your size equipment)) at your location before you leave to pick up your nuc. This will provide one less thing to do when you arrive home with your bees.

Not every nuc will be the same size or strength. We examine each nuc to confirm there is brood, bees and a laying queen. There may be one frame of foundation that is not yet fully drawn out. By not having the frames all drawn out, we can better provide bees that are in quick growth mode yet not in imminent danger of swarming. The brood will be different ages. By buying a nucleus hive, you have about a three to four week head start on brood rearing over a package. New bees will be emerging as you drive home unlike in a package where the queen will be released and start to lay eggs about 3 days after getting the bees installed.

Step 1: Transporting

1. Keep your nuc as cool as possible. While there is some ventilation in the boxes they come in, for the health of the bees you need to go directly from the pickup location to your hive location. Dress warmly and run the air conditioner on the way home.
2. Be sure the box is secure so it does not tip over or that the lid does not come open. We will tape the lid shut. If you transport them inside a vehicle you might consider covering them with a net or light sheet. There may be a few “hitch hiker” bees on your nuc. We will do our best to brush them off before they are loaded in your car.
3. Do not stop for a long period of time with the nuc in a hot vehicle or in the bed of a truck in direct sunlight. Rain or cold wind will not harm them and will help keep them cool.

Step 2: Installing

1. After a couple of hours, or the next day, you can transfer the frames in your nucleus hive to your deep box. You most likely will not need smoke, but if the weather is cool and cloudy, you may want just a bit.
2. Place your nuc next to your hive. Open the lid on the nuc box slowly. If there are many bees bouncing off your veil, you may want to give them a puff of smoke.
3. In the nuc, start with the outermost frame closest to you. Separate it from the adjacent frame and then carefully remove it from the nuc. Place the frame hive body. Continue to move all frames and place them in the deep in the center of the deep box,in the same order they came out of the nuc. (This is important to keep the brood cluster together.) When putting the frames in the deep box, lower the frame into the empty area and then slide it up to the previously installed frame to avoid rolling bees.
4. Add your remaining frames on either side of the nuc frames to total 10 or 8 (depending on what size equipment you are using).

Step 3: Feeding

If using new equipment it is important to feed, as it takes a lot of energy to draw out (build) new frames. There are many more ways to feed than can be explained here, but here are a few tips:

- If you are using a hive top feeder, DO NOT use an inner cover. This type of feeder is what we use at Double B Apiary & Farm. Please follow all instructions for use, which are included with your feeder.
- Use pollen patties when there is no pollen available from overwintering trees and plants. Place patties on top of your frames and add a shim.
- When using liquid feed, syrup should be 1 pound of sugar per 1 pound (pint) of water (4 pound bag of sugar mixed in 2 quarts of water).
  After feeding, close the hive. The size of the entrance should be reduced to an opening of 1⁄2 by 1 inch using a wooden entrance reducer. As soon as there is congestion at this small entrance, you can remove the entrance reducer.

Step 4:

Depending on the age of the brood in the nuc, how much you feed them upon arrival, and what the weather and nectar and pollen flows are like at their new home, they can fill your single story deep box in 2 weeks or it may take 6 weeks or more. Once the bees start working the outermost frames (building comb or filling cells with pollen and nectar), place your second deep on top and continue feeding. When the bees have established 2 deeps, stop feeding, remove the feeder, and add a honey super.

Monthly Calendar

This calendar was designed for general beekeeping use in most of central North Carolina. Recommendations are based on average climate/weather conditions, and may vary with significant temperature changes. Those who manage hives for commercial operations may have different needs than those listed below. Details regarding bloom types/dates and pest/disease management are not included here due to space limitations; consult reliable and current resources for this information. This calendar is subject to being updated as new information becomes available. Remember: bees often follow a different calendar than humans do!

January

- Add pollen supplements, if needed; check the amount and location of honey stores, and feed (2:1 syrup or fondant) if <3/4 super of stored honey left.
- Check/repair/replace stored equipment; order wax/woodenware.
- Order nucs/packages.
- Keep learning---bee school, read books/journals, etc.
- Combine or insulate smaller (less than 4 frames of bees) hives.
- Combine hives where the queen has failed, if they're still alive and haven't absconded.
- Move hives if they'll need to be relocated this year.
- Bees may need help removing dead bodies from the entrance area.

February

- Noticeable pollen flow under way, especially red maple- brood build-up intensifying.
- Minimal if any nectar available---most hives need feeding (1:1 syrup in most cases, unless honey stores very low [i.e., <1/2 super left]).
- Combine hives if needed (see January entries above).
- Repair/replace equipment if needed; move hives if needed; keep learning.
- During the last half of February, consider adding a super/hive body of wax foundation to allow bees to draw out more comb for spring. (Feeding or nectar is required for this.)
- Replace a few (<4) frames where the comb is old or has excessive drone cells.
- Some hives may need treatment for Nosema disease, especially if too cold for cleansing flights.
- Call your local cooperative extension office if you want your name on a "swarm-catcher" list.
- Make plans to attend the annual NCSBA Spring Meeting in March.

March

- NCSBA annual Spring Meeting (usually the first weekend in March)---great learning opportunity!
- Swarming under way -> implement prevention measures (make splits, remove queen cells, “checkerboard”, temporarily or permanently remove current mother queen); set up “bait” hives.
- Reverse bottom two or three boxes on the hive to give the queen more room to lay: most hives have moved up above the bottom hive body, leaving it virtually empty. This measure also helps reduce swarming. Caution: be careful not to split up clusters of brood when you do this. Two to three weeks after this reversal, it’s likely that you’ll need to reverse them again. (An alternative to reversal: simply add another hive body.)
- Assess for pest and/or disease problems (especially varroa mites, American foulbrood, and European foulbrood) and treat if needed. Treatments should be completed by early April to limit the risk of contaminating honey.
- Check honey stores; feed (1:1 or thinner syrup) if needed.
- Look closely at the brood pattern; order new queen if current one failing.
- Continue to replace a few frames of old/undesirable comb, if needed.
- Near the end of the month, add at least one honey super; remove entrance reducers; equalize hives.

April

- Nectar flow is often heaviest this month: make sure that all medications are out of hive unless required for bees’ survival, be prepared to add new supers every 7-10 days, and remove feeders from all except new or weak hives.
- Bees should be very busy; closely examine hives that are not, and trim weeds that may be hindering flight.
- Swarming usually heavy---continue prevention/capture measures.
- Look closely at brood pattern; replace queen if needed.
- Have everything ready to install nucs/packages that you’ve ordered; feed upon installation.
- Consider adding queen excluder to prevent brood in honey supers.

May

- Nectar flow continues---keep adding supers; get extraction/bottling equipment ready. Consider adding an additional hive entrance (via 5/8" hole or shim) above the brood area, for foragers.
- Swarming continues---keep up prevention/capture measures.
- Replace failing queens.
- Start planting annuals for future nectar/pollen supplementation.
- Install traps for small hive beetles if needed (i.e., if more than 20 adult beetles seen in hive).
- Place two or more bee "watering holes" in apiary, if not already present.

June

- Main nectar flow starts to dwindle---fewer supers needed, unless sourwood nearby: if in area of sourwood, consider harvesting available honey before mid-June sourwood flow to ensure more "pure" sourwood crop.
- If honey being harvested, put "wet" supers back on hives late in day to limit robbing.
- Can start late-season splits during the last half of June; feed splits initially, even if there is nectar available
- Continue measures to control small hive beetle population.
- Keep water for bees constantly available.
- Make plans for attending NCSBA Summer Meeting in mid-July.

July

- May harvest some (or all) of honey; may continue late-season splits; continue beetle controls; keep water available for bees (see June activities).
- Attend NCSBA annual Summer Meeting, if possible (usually mid-July)---great learning opportunity!
- Get supers on for cotton honey, if hives near cotton fields.
- Replace failing queens; consider replacing any queen that is two years old or older.
- Can begin annual varroa mite assessment, and treat if needed/practical.

August

- If not in areas of significant cotton bloom, harvest remaining desired honey by mid-month to keep bees from eating it.
- Pest control is critical this month: hive beetle populations are peaking, varroa mites are nearing their peak populations, increase the risk of damage from wax moth, and yellow jackets
- Careful assessment of queen performance---this month is usually last chance to replace queens until the following spring.
- Can still make late-season splits early in August if using mated queens.
- Keep water available for bees constantly.
- Be prepared for "badly behaving bees": because nectar flow is so scarce, bees may become more defensive and more likely to rob other hives install robbing screens or entrance reducers (but be aware of need for ventilation), and keep hive inspections as brief as possible.
- Completing honey harvest + decrease in the queen's egg-laying = extra empty supers of drawn comb; store them using method that prevents damage from wax moth larvae (freezing, keeping open to light/ventilation).

September

- Continue measures for pest control; if hives exposed to but not sickened by American foulbrood, apply treatment to prevent full-blown disease. Varroa control should be completed by the end of the month!!
- May feed thin sugar syrup for 2-3 weeks to stimulate queen laying---builds up winter population---but by last week of September, begin feeding thicker syrup for winter stores, thicker syrup may not be necessary if >3 supers of honey left on hive
- Consider Nosema assessment/treatment.
- Combine colonies later in the month if weak and/or have failing queens.
- Should have brood in bottom box if not, may need to rearrange things.

October

- Post-treatment assessment for varroa mites (i.e., did your treatment work?).
- Remove all queen excluders, if present.
- Combine hives that are weak/have failing queens.
- Feed thick syrup, if needed, for winter food stores.
- Limit frequency of inspections after mid-October: bees are sealing cracks with propolis, and waste lots of time/energy if they have to keep replacing it.
- Add entrance reducers near end of month to keep mice out.
- Drones being expelled in most hives.
- Plant (in October and November) herbaceous perennials for future nectar/pollen sources.

November

- Combine hives that are weak/have failing queens.
- Ensure adequate ventilation near top of hive.
- Feed thick syrup, if needed, for winter stores.
- Provide weights (brick, rock, concrete block, etc.) for tops of hives to limit wind-induced toplessness.
- Plant trees for future nectar/pollen sources (tulip poplar, maple, sourwood, etc.).
- Consider closing off screened bottom board to improve heat insulation.
- Be caught up before Thanksgiving, so you can enjoy food, family, football, Black Friday, etc.!

December

- Combine hives that are weak/have failing queens.
- Feed thick syrup if needed (i.e., if not more than one super of honey stored up).
- Consider insulating smaller hives (those with 4 or fewer frames of bees). Sell honey to Christmas gift shoppers.
- Year-end review/assessment of apiary success/challenges.
- Leave bees alone, if possible. (Take a break---you probably need it by now!)

A Quick Reference Guide to Honey Bee Parasites, Pests, Predators, and Diseases

Varroa Mite (*Varroa destructor*)

The varroa mite is considered by many to be the most serious malady of honey bees. It now occurs nearly worldwide. This external parasite feeds on the hemolymph (blood) of adult bees, larvae, and pupae.

Honey Bee Tracheal Mite (*Acarapis woodi*)

A second mite that infests honey bees is the honey bee tracheal mite. This internal parasitic mite lives within the tracheae, or breathing tubes, inside the thorax of adult honey bees. Tracheal mites also may be found in air sacs in the thorax, abdomen, and head. The mites pierce the breathing tube walls with their mouth parts and feed on the hemolymph, or blood, of the bees.

Small Hive Beetle (*Aethina tumida*)

The small hive beetle, North America's newest beekeeping pest, was first identified in Florida in the spring of 1998. This pest originated in Africa. The adult beetle is small (about one-third the size of a bee), black or brown, and covered

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with fine hair. The larvae are small, cream-colored grubs without prolegs.

Bee Louse (*Braula coeca*)

Braula coeca, commonly known as the bee louse, actually is a wingless fly. The adults are small (slightly smaller than the head of a straight pin), and reddish-brown in color. Although several adult flies may live on a queen, usually only one will be found on a worker. These pests apparently do little harm.

Larval Greater Wax Moth (*Galleria mellonella*)

Larvae of the greater wax moth cause considerable damage to beeswax combs left unattended by bees. Beeswax combs in weak or dead colonies and those placed in storage are subject to attack. Wax moths pose a continuous threat except when temperatures drop below 40oF.

Spiders, Earwigs, and Cockroaches

Beehives provide shelter to a number of large and small arthropods such as spiders, earwigs, and cockroaches. These are not harmful to the bees or hive equipment and do not require control.

Ants

Ants usually are not serious pests in honey bee colonies. Occasionally,

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however, certain species may enter colonies to search for food or establish nesting sites. Ants typically are found between the inner and outer covers of the hive and in pollen traps. Although ants seldom disturb the bees, they can be a nuisance to the beekeeper.

Mice

Mice are a serious pest of stored combs and may inhabit active honey bee colonies during the fall and winter months. These rodents chew combs and frames to make room for building their nests. Mice urinate on combs and frames, making bees reluctant to use the combs or clean out these nests in the spring.

Skunks

In some locations, skunks are a serious threat to successful beekeeping since they hamper the development of strong colonies. Being insectivorous (insect eating), skunks will raid bee yards nightly, scratch on hive entrances, and consume large numbers of bees. Although such attacks are most common in the spring, they also can occur throughout the summer and fall.

Bears

Bears are a serious threat to beekeeping operations since they do a great deal of damage to hives and equipment. They normally visit apiaries at night, smashing the hives to eat brood and honey. Once bears locate an apiary, they return again and again, and it becomes exceedingly difficult to control their marauding behavior.

Brood Diseases

American Foulbrood (*Paenibacillus larvae* = *Bacillus larvae*)

American foulbrood (AFB) is an infectious brood disease caused by a spore-forming bacterium. It is the most widespread and destructive of the brood diseases, afflicting queen, drone, and worker larvae alike. Adult bees, however, are not affected by AFB. This disease occurs in two forms: vegetative (rod-shaped bacterial cells) and spores. The spore stage is unique to this type of bacteria, as it may persist for 40 years or more.

European Foulbrood (*Melissococcus pluton*)

European foulbrood (EFB) is a bacterial brood disease. It is considered a stress disease and is most prevalent in spring and early summer. It is less serious than AFB, and colonies can recover from infections. EFB does not form spores but often overwinters on combs. It gains entry into the larva in contaminated brood food and multiplies rapidly within the gut of the larva.

Chalkbrood (*Ascophaera apis*)

Chalkbrood, a fungal brood disease of honey bees, is caused by a spore-forming fungus. Worker, drone, and queen larvae are susceptible. Spores of the fungus are ingested with the larval food. The spores germinate in the hind gut of the bee larva, but mycelial (vegetative) growth is arrested until the larva

is sealed in its cell. When larvae are about 6 or 7 days old and sealed in their cells, the mycelia break through the gut wall and invade the larval tissues until the entire larva is over-come. This process generally takes from 2 to 3 days.

Sacbrood

Sacbrood, a disease caused by a virus, usually does not result in severe losses. It is most common during the first half of the brood-rearing season. It often goes unnoticed, since it affects usually only a small percentage of the brood. Adult bees typically detect and remove infected larvae quickly. Often, if the sacbrood is widespread enough for the beekeeper to observe the symptoms, the disease may be so severe that the adult worker population is reduced.

Bee Parasitic Mite Syndrome (BPMS)

This situation most likely is associated with varroa mites, viruses, or a combination of both. Affected larvae die in the late larval or prepupal stage, stretched out in their cells often with their heads slightly raised. In the early stage of infection, they are white but dull rather than glistening, and they look deflated. This is one of a complex of symptoms that has been given the name “Bee Parasitic Mite Syndrome” or BPMS.

Adult Diseases

Paralysis

Paralysis is a symptom of adult honey bees and usually is associated with viruses. Two different viruses, chronic bee paralysis virus (CPV) and acute bee paralysis virus (APV), have been isolated from paralytic bees. Other suspected

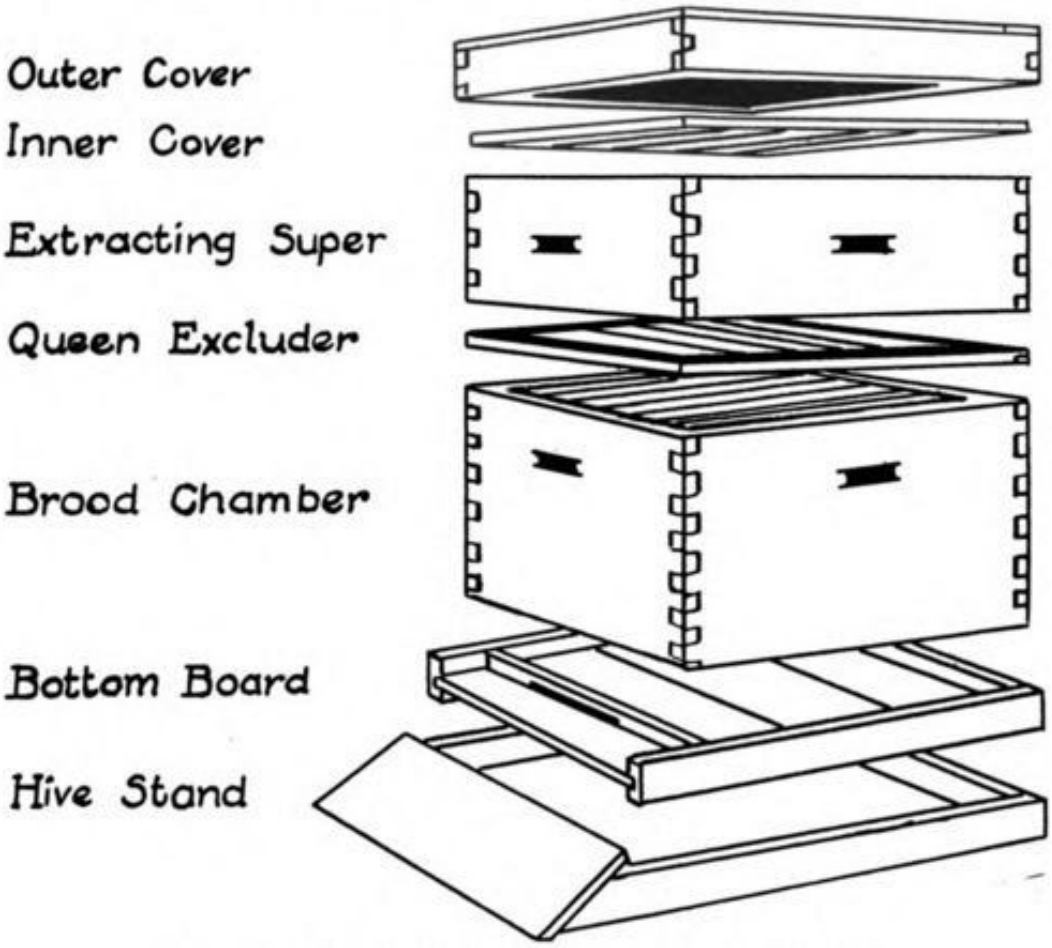
causes of paralysis include: pollen and nectar from plants such as buttercup, rhododendron, laurel, and some species of basswood; pollen deficiencies during brood rearing in the early spring; and consumption of fermented stored pollen.

Nosema (*Nosema apis*)

Nosema disease is caused by a spore-forming protozoan that invades the digestive tracts of honey bee workers, queens, and drones. Nosema spores are ingested with food or water by the adult bee. The spores germinate and multiply within the lining of the bee's midgut. Millions of spores are shed into the digestive tract and are eliminated in the feces.

Deformed wings

Adult bees with deformed wings and bodies are common in honey bee colonies with varroa mite infestations. These deformities most likely are caused by varroa mites feeding on the bees as they develop, a virus (deformed wing virus), or perhaps a combination of both.


Outer Cover
Inner Cover
Extracting Super
Queen Excluder
Brood Chamber
Bottom Board
Hive Stand

Beehive Inspection Checklist

DATE/TIME OF DAY:	HIVE 1	HIVE 2	HIVE 3	HIVE 4	HIVE 5	HIVE 6
GENERAL HIVE APPEARANCE						
Are the bee actively entering/exiting the hive?						
Are the bees bringing in pollen?						
Are there signs of robbing?						
Are there signs an animal has been disturbing the hive? *(Chew or scratch marks from skunks, raccoons, etc.)*						
Are the bees calm when you open the hive? *(An agitated or disorganized colony can indicate: queenlessness, poor weather/inspection timing, or a recent intruder.)*						
REPRODUCTION						
Is the brood pattern good? *(A quick look can indicate the presence of disease or an unwell queen.)*						
Are larvae healthy, white, and shiny?						
Is royal jelly present in cells with larva?						
Is there brood in capped and uncapped cells?						
Is there one egg or larva per cell?						
SIGNS OF PESTS						
Mites test results *(A visual inspection is insufficient — proper testing is the only way to get an accurate estimate of the mite population.)*						
Are ants present?						
Are wax moths present?						
Is there an unusual number of dead bees?						
Is there an odor? *(Could be foulbrood.)*						
CAPACITY						
How many frames are "covered" in bees? *(Some say counting "seams of bees." Look down into a box and see how many seams between frames are full of bees.)*						
How many frames are being fully or almost fully used for brood?						
If in a nectar flow, do my bees have space to store nectar? *(Do the bees have empty comb and/or new frames to build comb where they can store nectar OR do I need to add a super?)*						
WEATHER CONDITIONS						
Temperature/Precipitation						
Has there been a substantial change in total population since the last inspection?						