Honey Bees as Pollinators: Answers to Frequently Asked Questions

Honey bees are essential in the production of many vegetable and fruit crops, especially the cucurbit crops, blackberries, raspberries and blueberries.

Where can I find honey bee hives to rent?

The NCDA&CS Apiary Services and NCSU Apiculture Program have developed Bee Linked, an online market for beekeepers and growers. www.ncagr.com/beelinked
You can also find local beekeepers through the North Carolina Beekeepers Association Website. www.ncbeekeepers.org.

When should I apply pesticides to protect the bee hives?

Pesticides that are considered toxic to bees should be applied in the late afternoon (after 3:00 pm) or in the evening. Most honey bees have stopped foraging and have returned to the hive by 3:00 pm. This precaution will allow maximum time for the pesticide to break down before the bees come into contact the next day.

What other considerations are important when applying pesticides?

Do your best to minimize drift. Drifting of the pesticide from the target pest and/or crop to areas frequented by bees should be minimized and pesticide formulation is the key to this problem. "Dusts" are prone to drift and are generally more dangerous to bees that sprays or granular applications.

Aerial applications are generally more dangerous than ground equipment. This is directly related to drift. Air-blast sprayers are more dangerous than pressurized pump sprayers. Never apply pesticides when wind velocities exceed 8 miles per hour.

Never apply any pesticide directly over a beehive.

Notify beekeepers who have beehives near an area to be treated, so that they may attempt to protect their bees from inadvertent exposure.

Are there pesticides that are less toxic to honey bees?

Most pesticides are at least somewhat toxic to honey bees; however, the degree of toxicity varies considerably from product to product. Insecticides are generally the most likely to cause a bee kill. Below are some common pesticide active ingredients listed based on their toxicity to honey bees.

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Honey Bees Continued...

Are there pesticides that are less toxic to honey bees? (continued from front page)

For a complete list of pesticide toxicity to honey bees, see contact the Extension Office or go to http://www.cals.ncsu.edu/entomology/apiculture/ to obtain Beekeeping Note 2.12.

Highly Toxic: Severe bee losses may be expected if these products are used when bees are present. Abamectin, aldicarb, avermectin, azinphos-methyl, carbaryl, carbofuran, chlorpyrifos, dimethoate, imidacloprid, malathion, methomyl, permethrin, spinosad…

Moderately Toxic: These pesticides can be used in the vicinity of bees IF dosage, timing, and method of application are correct. Bifenazate, disulfoton, endosulfan, fluvalinate, oxamyl, propamocarb, pyrethrum, tartar emetic, temephos, terbufos, thidicarb, zephyr…

Relatively Non-Toxic: These pesticides can be used around bees with a minimum injury IF dosage, timing and method of application are correct. Bacillus thuringiensis, chlordimeform, cryolite, cymiazole, dicofol, dinobuton, esfenvalerate, methoxychlor, myriproxyfen, nicotine, Nosema locustae, pyrethrum, rotenone, tebufenozide, trichlorfon.

Visit the NCSU Apiculture Website for more details on honey bees

http://www.cals.ncsu.edu/entomology/apiculture/

Honey Bee Fun Facts

- Honeybees are not native to the USA. They are European in origin, and were brought to North America by the early settlers.
- Agriculture depends greatly on the honeybee for pollination. Honeybees account for 80% of all insect pollination. Without such pollination, we would see a significant decrease in the yield of fruits and vegetables.
- Bees collect 66 lbs of pollen per year, per hive.
- Honey is 80% sugars and 20% water, hygroscopic and has antibacterial qualities. Eating local honey can fend off allergies.
- Honeybees are not aggressive by nature, and will not sting unless protecting their hive from an intruder or are unduly provoked.
- In North Carolina—Averaged over the last five years, honey bees have directly accounted for approximately $96 million in annual fruit and vegetable production (67.9%) and approximately $186 million in total annual crop productivity (24.5%).
- Honey bees can fly up to 9 miles from their nest in search of food. Usually, they fly one or two miles away from their hive to forage on flowers. Honey bees fly at 15 miles per hour.
- Honey bees are entirely herbivorous when they forage for nectar and pollen but can cannibalize their own brood when stressed.
- Worker honey bees live for about 4 –8 weeks in the spring or summer but up to several months during the winter.
- A populous colony may contain 40,000 to 60,000 bees during the late spring or early summer.
- The brain of a worker honey bee is about a cubic millimeter but has the densest neuropile tissue of any animal.
Fungicide Presidio Now Labeled for Use Through Drip Irrigation

The EPA has approved the drip irrigation label for Presidio (fluopicolide) on brassica (head and stem), cucurbit vegetables fruiting vegetables, and leafy vegetables.

Presidio is a relatively new product from Valent USA Corporation. Presidio has been shown to be efficacious for the control of many vegetable disease problems including downy mildew on cucurbits and soilborne and foliar Phytophthora diseases for tomato and pepper.

As with all pesticides, Presidio should be applied according to the label. For Presidio, this includes tank mixing with another fungicide with a different mode of action that is labeled for the pathogen you are controlling on the specific crop you are treating.

2010 Southeastern Vegetable Crop Handbooks Available

This comprehensive resource was developed from research and Extension projects conducted at 12 land-grant universities, including N.C. State. The handbook contains everything tomato growers need, including which variety to plant, planting dates, fertilizer recommendations, cover crops selection and conservation tillage options, pesticide selection, fertigation, plasticulture, postharvest handling, alternative pest management tools and more.

Contact your local Cooperative Extension Office to request your copy.

Mills River Farmer Market is Looking For Vendors for 2010

Producers within 50 miles of Mills River who specialize in fresh produce, dairy, meat, eggs, nursery stock, transplants, value-added products, locally produced crafts and other farm products are invited to apply.

When?: Saturdays, 8 am—noon starting May 8th
Where?: Mills River Commons, Boylston Hwy (NC 280)

Contact Jim:
828.890.4105 or millsriverfarm@yahoo.com

Did You Know?

- Thomas Jefferson was one of the first Americans to grow tomatoes, which were called "love apples" at the time. Even in the U.S. the tomato has been eaten for only 150 years.
- In the United States in the 1930s, a “cucumber” was slang for a dollar.
- Christopher Columbus is supposed to have taken the first peppers to Europe.
- Carrots were the first vegetable to be canned commercially.
- If you eat onions you can get rid of onion breath by eating parsley.
Quarterly Strawberry Checklist
Gina Fernandez, Small Fruit Specialist, NC State University

This checklist was originally developed for growers in North Carolina. You will have to adjust your work activities either earlier or later depending on your location. For more detailed information, check the Southern Region Integrated Strawberry Management Guide and the Southeast Regional Strawberry Plasticulture Production Guide at: http://www.smallfruits.org/SmallFruitsRegGuide/index.htm

Spring (March-May)
√ Send in leaf samples to testing lab every 14 days starting in March/April
√ Adjust fertility according to the recommendations
√ Scout fields for mites, insects and diseases. Botrytis, anthracnose, powdery mildew, aphids, thrips, mites and clippers will be your primary pest problems at this time
√ Remove old leaves and open plastic where any branch crowns might be growing underneath plastic
√ Get pest problems under control with dormant, pre-bloom, pre-harvest and harvest sprays, customers don’t like to see sprayers in the field when they are harvesting
√ Make sure your irrigation systems for frost protection and drip are ready
√ Monitor weather forecasts closely, frost protect as needed, start on a date that is typical for your area, any earlier may result deformed fruit and unnecessary loss of sleep
√ Check your frost alarm to make sure that it is working properly
√ Control weeds or ryegrass in aisles with herbicide if not done so already
√ Apply straw mulch in aisles, if rye grass did not take
√ Place 2 hives of honeybees/acre near your field
√ Schedule picking and sales labor
√ Order portable toilets and emphasize proper sanitation for farm labor and the public
√ Get sales stand ready, tidy up, paint, make new signs, get new baskets…
√ Check and organize supply inventory
√ Clean out and fire-up refrigeration units
√ Have scales checked by proper authorities in your state
√ Harvest each plant 2x week
√ Figure out a system to collect customer names etc for your mailing list
√ Keep harvest records even when you are busy

Grower Information Portals

Growers Information Portals are designed to optimize growers’ and Extension agents’ efforts by creating a one-stop shop for a specific agricultural commodity. Each portal contains resources on:

- Production
- Business management
- Fresh produce safety
- Integrated Pest Management (IPM)
- Marketing
- Risk management

Visitors will find these materials and more, most of which are specific to North Carolina production of a certain crop. The goal is to provide growers and Extension agents with the information they need to maintain and grow a successful agricultural operation in North Carolina.

These portals were developed by N.C. MarketReady with funding from the N.C. Tobacco Trust Fund Commission and the Agricultural Advancement Consortium of the N.C. Rural Economic Development Center.

Portals available:
Blackberry & Raspberry - http://www.ncsu.edu/enterprises/blackberries-raspberries
Muscadine Grapes - http://www.ces.ncsu.edu/muscadines/
Strawberries - http://www.ncsu.edu/enterprises/strawberries/
Tomatoes - http://www.ncsu.edu/enterprises/tomatoes
Bramble (Caneberry) Spring Checklist
Gina Fernandez, Small Fruit Specialist, NC State University

This checklist was originally developed for blackberry growers in North Carolina. Many of the items apply to raspberry production as well. You may have to adjust your work activities either earlier or later depending on your location. For more detailed information, check the Southern Region Integrated Bramble Management Guide and the Southeast Regional Bramble Production Guide at: http://www.smallfruits.org/SmallFruitsRegGuide/index.htm

Plant growth and development
- Plants de-acclimate quickly
- Bud differentiation (additional flowers formed)
- Bud break
- Flowering
- Primocane emergence

Pruning and trellising
- Finish pruning and make sure all canes are tied to the trellis before budbreak
- Rotate shift trellises to horizontal position before budbreak, rotate to upright position immediately after flowering

Weeds
- Weed growth can be very vigorous at the same time as the bramble crop peaks, don’t let weeds get out of control
- Weed control is best done earlier in the season before harvest commences.
- Handweed perennial weeds in and around plots

Insect and disease scouting
The period of time in the spring when the plant is flowering is the most important season for chemical control of insects and diseases. Know what your pests are and how to control them.

Insects
- Raspberry crown borer burrows into cambium
- Stink bugs (white drupelets in summer)
- Rednecked cane borer adults (starting at bloom)
- Raspberry cane borer adults
- Thrips
- Tarnished plant bug
- Japanese beetle
- Raspberry fruit worm
- Midge
- Raspberry sawfly
- Blackberry psyllid
- Two spotted spider mites
- Aphids
- Whiteflies

Diseases
- Antracnose
- Botrytis (gray mold)
- Spur blight
- Cane blight
- Septoria leaf spot
- Leaf and cane rust
- Powdery mildew

Water management
- Bramble plants need about 1”-2” water/week, and this amount is especially critical during harvest.
- Consider installing an overhead system for evaporative cooling. Turn on once or twice a day from 10 am to 3 pm for short periods of time (approx. 15 minutes) until mid afternoon

Nutrient management
- Apply second half of nutrients if doing split application
- Take leaf samples after harvest and send to a clinic for nutrient analysis for recommendations for next year

Marketing and miscellaneous
- Service and clean coolers
- Make sure you have enough containers for fruit next season
- Prepare advertising and signage for your stand
- Contact buyers to finalize orders
- Hire pickers
- Prepare signage for field orientation, it is easier to tell pickers where to go if rows are numbered
Upcoming Events

May 10 - Poultry Production Workshop at the Mountain Horticulture Crops Research and Extension Center in Mills River, NC. The cost for the full-day workshop is $25 per person and includes lunch and resource materials. The workshop will be packed with experts from across the country, including Jim Adkins from the International Center for Poultry and Extension Research Specialists from NC State University. Space is limited so you need to pre-register by contacting Erin Bonito Buncombe County Center 828-225-5522.

May 27-28—Vermiculture Conference. Durham, NC. Mark Your Calendars! This is the only conference about earthworm farming and mid-to-large-scale vermicomposting held in the United States. Details about the conference are at [http://www.bae.ncsu.edu/workshops/worm-conference/](http://www.bae.ncsu.edu/workshops/worm-conference/).

June 9—NC Pesticide License Exam
Do you need to get a pesticide applicators license? The NC Department of Agriculture will be offering a licensing exam for pesticide applicators. You need to pre-register for this exam. Contact the Pesticide Division at 919.733.3556 and let them know you want to take this exam. There is no cost to take the exam, however you will need to purchase your study materials. Buncombe County Extension Office, 94 Coxe Avenue Asheville, NC 28801 For more details contact Amanda Stone 828.255.5522

June 25—Pesticide Safety Training for Private Pesticide Applicators
If you have a private pesticide applicators license and your recertification expires September 30 of 2010, then you need two credits in categories V and X. This class provides two credits in category V. Henderson County Extension Office, 740 Glover St., Hendersonville, NC 28792. To pre-register, please contact the Henderson County Extension office, 828.697.4891.

For more pesticide recertification classes please visit: [http://www.ncagr.gov/SPCAP/pesticides/license.htm](http://www.ncagr.gov/SPCAP/pesticides/license.htm)

Visit [wncveggies.blogspot.com](http://wncveggies.blogspot.com) for more events, deadlines and opportunities.