10 COMMANDMENTS FOR REARED (COMMERCIAL) BUMBLE BEES

1. **SHADE COLONIES ON HOT DAYS**. When temperatures approach 90°F bumble bees must spend significant time fanning to cool the colony and can not foraging. Also, at these temperatures the wax melts and the bees will discard the wax and brood.
2. **KEEP HIVES DRY**. Hives should be high enough so they don't get when irrigating. This is especially important with plastic containers. Otherwise the bees will drown.
3. **CENTER HIVES**. Place colonies on a dike towards the center of the marsh. In the beginning most bumble bees forage within 100 yards of the hive.
4. **REMOVE FEEDERS**. If the box for the colony comes with a feeder or food source, turn off access to it or remove it from the box. This will force the bees to forage in the marsh. However, the feeder can be used when insecticides are applied. Open the feeder and close up the box and the bumble bees can be kept safely for 24 hours without the bees being exposed to applied insecticides.
5. **PROVIDE LANDING STRIP**. If boxes are set in the air, the bees must have a 1/2" or larger ledge (landing pad) in front of the entrance. This allows workers to lay an entrance marker as they leave for the first time, helping them find their way back.
6. **MONITOR ACTIVITY**. To determine acceptable activity of a colony Count 4 to 8 colonies to reduce variability. Count the number of entries and exits over 5 minutes, calculate the mean and divide this number by 2. If 1/2 or less per minute = poor activity; 1 to 2 = acceptable; 3 = maximum expected. 1 bee coming or going equals about 90 to 100 bees per colony; 2 = 200-250 bees per colony. The colony is at its peak when both large and small bees come and go from the hive.
7. **CONTROL ENEMIES**. If you can open the hive, open the box and inspect for wax moths and kill any adults. The hives can also be treated with Bt products that will kill the larvae. At the end of the season burn all cardboard, packaging, etc. This will destroy parasites that may have colonized the hive.
8. **FENCE OUT BEARS**. Where bears are a problem put electric fencing around the hives. One bear can eat 5 colonies per night. They can also shake colonies off of poles.
9. **ADEQUATE ENTRANCE HOLES**. If the opening in the box is small (1/4") to allow only workers to exit, you must increase the opening to 1/2" or larger to allow new queens out towards the end of the season.
10. **FOLLOW FLOWERS**. If you have a mixture of cultivars on the marsh, place the bees by the early flowing cultivars first (BenLear), and then move to later cultivars (McFarlin).

Dr. Rod Macfarlane

USING Bt PRODUCTS IN CRANBERRY INSECT MANAGEMENT

Bacillus thuringiensis (Bt) is a naturally occurring bacterium that is fatal to larvae of the insect order Lepidoptera (such as brown spanworm and cranberry blossomworm). Bt works as a stomach poison. When a worm eats treated leaves, its gut is paralyzed and the insect stomps feeding usually with an hour. The insect may be able to crawl away; however, further plant damage stops. Typically the worm dies within 2-3 days.

In order to derive maximum benefit from Bt products it is necessary to apply them optimally.

- Use a spreader-sticker to increase coverage.
- Evening applications are best since Bt products break down in UV light.
- Use the minimum volume of water necessary to thoroughly cover foliage.
- Chemigation systems must be properly calibrated to supply uniform coverage and appropriate gallonages.
- Excessive purging of irrigation systems following Bt applications may wash the product off the plant surface and decrease efficacy.
- Add the sticker-spreader to the tank first and agitate, then add Bt product.
- Bt products may be tank mixed with other common insecticides for increased efficacy. See product labels for tank mixing details.
- Multiple applications may be necessary to achieve adequate control.
- Timing is critical. Applications must be made against early instar larvae (young).
- Wait 4-7 days after application before conducting post-treatment applications.

Bt is safe for non-target organisms, such as beneficial insects, honeybees, birds, fish, wildlife, humans, pets, farm animals and the environment. Insecticides containing Bt are general use pesticides and have a 12 hour restricted entry period. They offer little or no risk in incidences of non-target applications. However, since they are pesticides, proper equipment and application methods should be used and label directions followed.

Very small amounts of synthetic pesticides can be added to the Bt products to enhance control if the caterpillars are ½ inch or longer. Research done by Ocean Spray using Dipel® supports the addition of partial rates of synthetic pesticides to better control gypsy moth (not a problem in Wisconsin marshes, yet) and cutworms (blossomworm and false armyworm). Pyrenone® at 3 or 6 oz., Sevin® at 1 pint, or Diazinon® at 4 oz should give greater control of larger larvae than Bt alone. For brown spanworm, 3 oz of Pyrenone® added to 2 pints of Dipel® with 4 oz of Bond® has shown to increase efficacy. Remember to always read and follow the label. The label is the law.

Massachusetts has been granted a special local needs registration for a double rate of DiPel. This registration has not been granted for Wisconsin.

Teryl Roper, UW-Madison Extension Horticulturist
Information for this article came from a technical use bulletin for DiPel and an article by M.M. Averill and H.A. Sandler of the Univ. of Massachusetts.

FURTHER NOTES ON POAST

Last issue announced the labeling of Poast for bearing cranberries. A couple of items need some clarification. Dave Yarborough of the University of Maine reminds me that Poast will not control rushes either, only true grasses. Dave says “sedges have edges, rushes are round and grasses have nodes” and adds, this is not true 100% of the time but it is close.

Mary Jane Else of Umass reminds us to not apply Poast during the heat of the day and during bloom. Bloom is sensitive to spray adjuvants, especially crop oil. Don’t apply an adjuvant during the heat of the day to avoid phytotoxicity, even at timings other than bloom. Stressed vines are also sensitive to Poast and yellowing or speckling may follow application.

Product	Manfact.	Strain	Target pests	Rate	Cost
DIPEL ES	Abbott	B.t. kurstaki	Spanworm, Gypsy moth, Blossomworm, Fireworm, False armyworm Fruitworm, Sparganothis, Black cutworm, Loopers, Tent Caterpillars, Fall armyworm, Armyworms	1-4 pt/A 3.5% ai	$39/gal $5/pt
MVP	Mycogen	B.t. kurstaki encapsulated in killed Pseudomonas fluorescens Delta endotoxin	Armyworm, Loopers, Brown spanworm not active against gypsy moth	1-4 qt/A 10% ai	$26/gal $6.50/qt
AGREE	Ciba-Geigy	B.t. kurstaki & aizawai GC-91	Gypsy moth, Spanworm, Blossomworm, Cutworms, False armyworm	1-2 lb/A 3.8% ai in soluble pouches	$13.50/lb

SCOUTING FOR TIPBLIGHT

Now is the time to start scouting for the tipblight stage of the Cottonball disease. Cottonball, *Monilinia oxycoccus*, is a fungal disease that is somewhat unique to Wisconsin. Although this disease is occasionally found in other growing areas, the most serious outbreaks have occurred mainly in Wisconsin and on the west coast. Each year Wisconsin growers should actively monitor their marsh in search of Tipblight/Cottonball signs and symptoms.

Cottonball overwinters in diseased, shriveled fruit or "mummies" that often times are not picked up during the harvest process but remain on the marsh floor. In spring, diseased berries produce and send up mushroom bodies which in turn release spores that infect hew upright growth. Growers with a history of cottonball will normally protect the new growth in spring with two applications of Funginex (our only labeled fungicide for cottonball control), one at bud break and the other 7-10 days later. If by chance you missed or skipped the first two applications and tipblight becomes a problem, you still have a chance for recourse.

Early symptoms of tipblight started to show up during the week of June 12, mainly in the Warrens/Tomah growing area. The incidence of infection will continue probably over the next 2-3 weeks depending on degree day accumulations. Current symptoms show the top 1-2 inches of infected uprights beginning to wilt, collapse and turning brown, often times forming an inverted or upside down "V pattern" on the leaves. As the disease progresses, the top part of the crooked over portion of the uprights soon form a grayish-white powdery mantle. Spores that form on these uprights will then be released into the air thus infecting newly opened blossoms. Tipblight can occasionally affect a significant proportion of uprights to cause noticeable vine injury, however this is generally rare.

When scouting for Tipblight, diseased tips can be rather hard to find, especially as bloom progresses because the white mantles blend in nicely with blossoms, Also, focus on beds that have had a history of Cottonball and concentrate scouting on the harvest ends (or corners) of beds since the greatest proportion of inoculum (overwintering mummies) will be found in these areas. Although there are no economic thresholds developed for Tipblight/Cottonball, it should be quite evident when treatment is warranted based on the percentage of infected uprights or previous history.

If treatment becomes necessary, apply Funginex at early bloom (when 5-20% of the

flowers are open) then 7-10 days later for complete protection. Keep in mind that University tests have shown Funginex can be used safely during bloom with no deleterious effects to production or pollinators. Funginex should be applied at a rate of 24 oz. per acre per application with a maximum total of 4 applications per growing season. The restricted entry interval (REI) is 12 hours following applications with a pre-harvest interval (PHI) of 60 days.

Please consult the label or 1995 Cranberry Pest Management in Wisconsin Bulletin for further details. Note: the effectiveness of Funginex may be reduced when using the product through irrigation systems.

Tim Dittl, Ocean Spray Cranberries, Inc.

LADY BUD OBSERVATIONS

The week of June 5 we started to see some areas of heat stress/drought. Things really happen fast with this hot humid weather, so please be careful in the weeks to follow. We are slipping into the jewel stage, most pod development has been rapid. It is quite a colorful array out there at the moment. If things continue I would expect full bloom before the 4th of July.

Earlier this spring I was fearing a five week bloom, because the centers of the beds were at cabbage head while the edges and ends were roughnecking with early hooks. Presently things have become more consistent.

Flight has begun. We are observing Spanworm, Tipworm, Girdler, Sparg and BHFW flight already. When walking the beds it is uncommon not to see some kind of flight. Keep in mind that this is just an indicator of a potential problem.

Drs. Rod Macfarlane and Johnathan Smith have been working on a key for identifying Eastern American Bumble bee species. One would be pleasantly surprised by the number of species that are here and working. I, personally, find it fascinating and a bit challenging identifying these beneficial insects.

GULLIBLE OR WHAT?

Seven years ago, when I first started scouting marshes, a friend (?) stated that bees do NOT sting SCOUTS. Swallowing this theory, hook, line and sinker, I fearlessly went about my business, but for some odd reason the first day the bees were on one marsh, four of them left their stingers in my skin. Ahh, yes I was shocked! I have discovered that I failed to introduce myself as a SCOUT. Presently, at bee time, I distribute name tags to my employees. . . HELLO, I AM A SCOUT! Seriously, I encourage everyone to wear white or tan colors, do not use fragrance in shampoo, conditioners, or scented sunscreen. After all, we want bees to work the flowers, not the scouts.

Jayne Sojka, Lady Bug IPM

WEATHER

Degree-day accumulations appear to be close to the median, that is, half of the years we have fewer degree-days by this time of year and half of the years we have more. We must keep in mind that the temperature observations that are available to us quickly enough to be of use in making this report are not the same ones that go to form our long-term averages. Thus any departures from the long-term values may be due to differences in the two sets of measurements used.

Bill Bland, Extension Agricultural Climatologist

CRANBERRY MINI-CLINICS

Cranberry mini-clinics will be held in Sawyer County on Tuesday July 11 at 1:00 pm at the Zawistowski Cranberry Marsh on Cty E east of Stone Lake and on Wednesday July 12 at an undetermined site in Wood County. These are informal gatherings of growers and Extension staff to exchange ideas and information. Please put these dates on your calendar and plan to attend.

RECYCLING PLASTIC PESTICIDE CONTAINERS

The Wisconsin Fertilizer and Chemical Association (WFCA) is again leading the effort to recycle plastic pesticide containers in Wisconsin. The program, now in its fourth year, is funded entirely by the pesticide industry through the Agricultural Chemical Research Council (ACRC). Over 300,000 containers were recycled thus far.

To date, 55 Wisconsin agri-dealers have agreed to accept containers from other dealers and farmers. Farmers wanting to recycle their empty, clean plastic pesticide containers should contact their local dealer for information as to when and where the containers are collected. Dealers will have specific dates and times when they will accept containers. You'll need to call ahead before bringing containers to a dealer, but make arrangements before July 24 because that is the date chipping begins in Wisconsin. Containers will not be accepted on the day of chipping.

If you have questions regarding the program, please contact Joe Nagel, Spiritland Agri-service, 715-366-2500 or the WFCA office, 608-249-4070.

Please note that this is not a clean-sweep program. Only empty plastic pesticide containers that have been completely rinsed will be accepted. None of the participating sites are equipped to handle disposal of waste pesticides.

Some participating dealers in cranberry producing areas are listed below.

Adams Co-op Services, Adams
Cenex/Land O Lakes, Auburndale
Farm Bureau Co-op, Antigo
Federation Co-op, Black River Falls
Four Seasons FS, Inc., Eau Claire
Marathon Feed, Marathon
Mauston Farmers Co-op, Mauston
Rice Lake Farmers Union, Rice Lake
Shell Lake Co-op, Shell Lake
Spritland Agri-service, Almond

From: Roger Flashinski, Pesticide Applicator Training

1995 PHEROMONE TRAP COUNTS

Cranmoor area includes: Wood, Portage and Adams
Warrens area includes: Jackson, Monroe, and Juneau
Northeast area includes: Vilas, Forest, Oneida, Lincoln and Price
Norwest area includes: Douglas, Burnett, Washburn, Sawyer, Barron and Rusk

Please note that different regions may have different scales on the left axis. Doing this allows greater accuracy in determining actual values within a region. However, comparisons between regions are more difficult. Please use caution in making comparisons of these averages to trap counts on your marsh.

Northwest Area