

## NORTH CAROLINA BLUEBERRY CERTIFICATION PROGRAM

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The North Carolina Department of Agriculture and Consumer Services (NCDA&CS) would like to inform you about the requirements for participation in the Blueberry Certification Program (BCP) as stipulated by the Canadian Food Inspection Agency's (CFIA) directive (D-02-04) regarding the phytosanitary requirements for movement of regulated articles for blueberry maggot (*Rhagoletis mendax*) into Canada. Growers may choose either the integrated pest management or calendar spray option. If you choose the integrated pest management option and have questions about trapping for blueberry maggot that aren't answered below, you may contact NCSU Cooperative Extension (Dr. Lorena Lopez, 954-529-9042, [llopezq@ncsu.edu](mailto:llopezq@ncsu.edu)).

For a more detailed description of the requirements for participation in the Blueberry Certification Program please visit: <http://www.inspection.gc.ca/plants/plant-pests-invasive-species/directives/date/d-02-04/eng/1320046578973/1320046750986>

### **CHOICE A: INTEGRATED PEST MANAGEMENT FOR BLUEBERRY MAGGOT**

Growers that select the IPM option must monitor the production areas for blueberry maggot flies using yellow sticky traps baited with ammonium acetate lures. Traps should be placed at least two weeks before the expected blueberry maggot fly's emergence date.

The following table provides the **required trapping densities**:

Size of production area	Minimum number of traps
5 acres or less	4 traps
6 to 14 acres	6 traps
15 to 40 acres	15 traps
More than 40 acres	1 trap every 2.5 acres up to a maximum of 20 traps

#### **How to place traps:**

- Traps should be placed evenly inside the perimeter of the managed production area, within 9 yards of the edge. For low bush blueberry, the traps should be placed 4-6 inches above the plants. In highbush fields, the traps should be placed at mid-canopy height.
- Traps should be placed in a "V" shape (approximately 45° angle) with the apex and the yellow sticky surface facing the ground.
- Twigs and foliage in the vicinity of each trap must be removed to optimize its efficacy.

#### **Timing:**

- Traps should be replaced once every three weeks.
- Traps should be monitored once a week beginning when traps are placed in the field and continuing until the end of harvest.
- Lures should be replaced according to manufacturer's recommendations.

If even a single blueberry maggot fly is found in a trap within a managed production area, the grower is required to spray that area with an insecticide registered for use against blueberry maggot.

**Monitoring records must be kept by the grower and presented to the North Carolina Department of Agriculture & Consumer Services Plant Industry Division upon request.**

### **CHOICE B: CALENDAR SPRAY FOR BLUEBERRY MAGGOT**

Growers that select the calendar spray option must make their first insecticide application within five days of blueberry maggot emergence. Subsequent sprays must be made at five to twelve day intervals, depending on the insecticide, until the end of harvest. Insecticides must be approved for use on blueberries against blueberry maggot (*Rhagoletis mendax*) and must be used at the rates, dosages and intervals specified on the pesticide label and according to state recommendations.

**Records of all insecticide applications must be kept by the grower and presented to the North Carolina Department of Agriculture & Consumer Services Plant Industry Division upon request.**

### **ALL GROWERS: FRUIT SAMPLING AND TESTING**

The following section provides the guidelines for fruit sampling and testing for blueberry maggots which every grower participating in the program must follow.

Each sample consists of a minimum of **4.5 cups of ungraded blueberry fruit** collected randomly from each harvest in a managed production area. If the production area is more than 50 acres, one additional sample of 4.5 cups of blueberries should be collected. All samples must be collected prior to grading and should be tested within 24 hours of being picked.

Fruit samples must be tested for the presence of blueberry maggot larvae using **either a brown sugar or salt test**. *\*The water boiling test method is no longer acceptable under the new CFIA regulations.* Larvae from infested fruits will float out if fruit is placed in concentrated sugar or salt water. **This test must be conducted a minimum of once per week to ensure your berries are free of blueberry maggot.**

#### **Brown sugar or salt flotation test method:**

1. Prepare a concentrated sugar or salt solution as follows:
  - a. Sugar solution: Dissolve 8lbs of brown sugar in 5 gallons of water. The resulting solution should have a brix index of 15.
  - b. Salt solution: Dissolve 2.5lbs of salt in 4 gallons of water.
2. Place sampled blueberries into a container. Large samples must be divided into smaller sub-samples and tested separately. Each sub-sample should be small enough that it covers the bottom of the container with a single layer of fruit.
3. Gently crush the berries in the container with a potato masher.
4. Add enough of the sugar/salt solution to completely cover the crushed berries. The solution should be at least 1/4" above the crushed berries. Do not reuse the sugar/salt solution.
5. Gently agitate the crushed berries in the solution.
6. Allow the mixture to stand for 10-15 minutes to allow insect larvae to float to the surface.
7. Examine the surface of the solution for insect larvae. You should have good lighting and a hand lens in order to differentiate blueberry maggot (*Rhagoletis mendax*) larvae from spotted wing drosophila (SWD, *Drosophila suzukii*) larvae.

**If you have any questions regarding these protocols, please contact:**

**Amy Michael, Entomological Programs Manager**

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**Email:** amy.michael@ncagr.gov

**Please make sure to abide by these regulations when you ship your blueberries to Canada.**