

## The Blueberry Fruit Fly

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### Introduction

The Blueberry Fruit Fly, *Rhagoletis mendax* Curran, is considered to be the most serious insect pest of lowbush blueberry. While the direct losses of actual crop are probably minimal, the presence of the larva of this fly in the harvested fruit at even very low levels can have severe consequences on the commercial value of the crop. The following fact sheet outlines the biology of this insect, and suggests monitoring and management techniques.

### Blueberry Fruit Fly Adult



*Click picture to enlarge*

### Description

Adult Blueberry Fruit Flies can be distinguished from other flies found in lowbush blueberry field by the distinctive black pattern of the wings (Fig. 1). The adult females are about 4.75 mm in length with a wing span of about 8 mm. The males are slightly smaller in size. Females have a pointed abdomen which is black with four white bands across it. The males have a rounded abdomen, which has three white bands.

There are two closely related species which are similar in appearance. The apple maggot adults are identical in appearance to the Blueberry Fruit Fly, but are slightly larger in size. They are not common in most blueberry fields. The Black Cherry Fruit Fly also has a similar wing pattern. Close examination will show that the wing pattern of the Blueberry Fruit Fly is continuous, and the wing pattern of the Black Cherry Fruit Fly is broken.

The eggs are oblong and creamy white in colour. They hatch into white coloured larvae or maggots. The pupa is formed in the soil. It is oval in shape, and reddish brown in colour.

## Biology

The adult flies emerge in late June to early August, depending on the location and the season. They live for about 30 days. Males are the first to emerge. The adult flies spend one to two weeks resting and feeding on honeydew, and dew on the foliage of the blueberry plants. Egg-laying begins 7 to 10 days after emergence. The eggs are laid beneath the skin of the berry. There is usually only one egg per berry. A female may lay up to 100 eggs.

The egg hatches in 7 to 10 days, into a small white larva (maggot). The larva feeds on the interior of the berry for two to three weeks. When fully grown the larva exits out of the berry and enters the soil. Usually the infested berry drops to the ground before the larva exits. The puparium is formed in the soil from 2 to 5 cm below the surface. The majority of pupae, 90% or more, emerge the following year and the remainder after two years in the soil, although some may emerge after three or even four years.

## Damage

The larvae of the Blueberry Fruit Fly consume the interior portion of the berry. As a result the berry shrivels and usually drops prematurely from the plant. While this causes some loss of crop, in most cases the total amount lost is not significant. Infested berries that remain on the plant and are harvested can result in major losses as there is a zero level of tolerance for infested berries for many of the major markets.

## Monitoring Technique

Blueberry Fruit Flies can be monitored by using yellow coloured sticky traps. Pherocon® AM traps are available commercially. These traps are placed in the field in sheltered areas with a plentiful amount of blueberries present. Trap sites should be located in the outer margin of the field, especially in areas adjacent to sprout fields or to woodland. The traps are suspended from a rod, about 10 to 15 cm above the blueberry plant. The traps are deployed in a V-shape with the yellow sticky surface of the trap facing outward.

**Pherocon® sticky trap**



*Click picture to enlarge*

The traps are checked three times per week for the presence of Blueberry Fruit Flies. The number of flies caught should be recorded, and any trapped flies would be removed from the trap. A record of trap catches in each field should be maintained until harvest.

It is recommended that you use 2 traps per hectare for fields of 5 ha or less. For larger fields, traps should be placed about every 100 m along the periphery of the field.

The emergence of adult Blueberry Fruit Flies is quite variable throughout the province. The following guidelines are suggested for placing traps in the field in your area:

<b>County</b>	<b>Date</b>
Colchester	June 20
Halifax	June 20
Hants	June 15
Kings	June 15
Lunenburg	June 15
Queens	June 15
Yarmouth	June 15
Other	June 25

## Action Threshold

The action threshold for this insect is one fly captured. The reason for this low threshold is that export requirements are for 0 larvae per litre.

Continue to check the traps even after the threshold has been reached. This information can be used to determine the effectiveness of spray applications. It can also indicate the need for a second spray application.

## Trapped Adult Flies



*Click picture to enlarge*

## Control

The practice of management is important in helping reduce the number of Blueberry Fruit Flies in a field. Weed control reduces the number of areas in a field that the flies can use for shelter. Thorough pruning so that no berries are present in the non-crop year will force the flies to move out of the fields to lay their eggs. If possible, avoid having fields divided into crop and non-crop sections as the majority of flies emerge in the non-crop year of a two-year cropping system.

The debris from winnowing piles should be destroyed or buried, especially if field cleaning is done. Heavily infested berries should not be left unpicked, but should be disposed of to reduce the re-infestation in the same or a nearby field.

Cultural practices will reduce the number of flies. However, it is necessary to use chemical controls to insure that berries are free from infestation. If the action threshold for a field is reached, an insecticide should be applied within 7 to 10 days. In some instances it may be

necessary to apply a second spray. Control products and rates of application are listed in the Lowbush Blueberry Protection Guide ACC 1011.

*Note: Nova Scotia growers can purchase traps through the Blueberry Producers Association of Nova Scotia.*

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