

**Workshop Title: Managing the Spotted Wing Drosophila**

**Speaker(s) & their titles:** Dr. Debra Moreau, Agriculture and Agri-Food Canada (NS)

**Executive Summary**

This workshop discusses on-going research on the Spotted Wing Drosophila – a fairly recent invasive pest in the Atlantic Region. Early detection and identification, damage mitigation and prevention, and organic treatment options are the main points of discussion.

**Detailed Notes**

Dr. Moreau has been leading research on the spotted wing drosophila (SWD), which is a fairly recent invasive pest in the Atlantic Region.

Fruit flies are part of the family called Tephritidae. The common drosophila or “fruit fly” is generally found around compost piles or in kitchens. These common fruit flies are part of the larger Drosophila Family, as is the Spotted Wing Drosophila.

Identifications:

These insects become interested in the fruit as they ripen, much like humans. The male has spots on its wings, the female does not, but she has a sharp serrated “tail” that allows her to cut into the fruit and lay eggs.

Temperature and humidity are driving variables for this insect. Its entire lifecycle lasts 8 days. Eggs look like tiny cigars with two respiratory tubes sticking out. Eggs will hatch in 1-2 days. There are 3 larvae or maggot stages, followed by the pupae stage.

Commercial and Alternative Hosts:

Commercial – cane berries, blueberries, sweet cherry, grapefruit, etc

Damaged/Drop Fruit

Non-cultivated crops

Look for damage or injury on fruit - small pin holes or leaking. On strawberries, you may notice a darkening.

The spotted wing drosophila can compromise the integrity of the fruit and open it up for infestation by other forms of drosophila.

Grapes are more susceptible if they are damaged. Thinner skinned table grapes may be especially susceptible.

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The fly is thought to have come from east Asia. It was identified as a problem in Japan in the 1930s with damage on sweet cherries. It then moved to Hawaii. By 2009, it had made its way to North America, likely travelling on imported fruit. By 2011-12 it populated the eastern seaboard, including the Maritimes. In 2013, it was even found in Newfoundland.

“Contech” traps were set up to capture flies. Paired or parallel traps were placed further in to determine what parts of the fields or plots the flies preferred.

A huge increase in population in mid-fall could signal problems for those hoping to go later into the season.

Originally found that fruit was infected before flies ended up in traps. It's estimated that traps are picking up about 1 in 10 flies.

Monitoring and trapping is key. No need to manage if you're not finding them in your field.

You can easily make your own traps with a simple plastic cup and lid, some tape and a small hole punch. Bait the flies with apple cider vinegar. Place the traps a metre off the ground, except for perhaps strawberries where you just want them above the canopy of the plants. Weekly sampling and partial shade. Change vinegar weekly as they are attracted to taste and odour. Do not dump old vinegar in field. If you find 1 or 2 males you should manage the pest. Easiest is to pour contents of cup into white tray for best visibility.

If you find males in your trap, you should collect a sample of fruit. Add fruit to sugar solution (.7kg sugar/4l water). Gently macerate fruit. Wait 30-40 minutes and maggots should crawl out. Trapping is a first indication. Checking fruit is a better test.

Sanitation:

Harvesting fruit promptly and regularly is critical. Don't wait too long for colour change. Probably best to take off fruit a bit earlier. Have 2 buckets to remove any potentially affected fruit and remove them from field for disposal. Not much info on how best to dispose of bad fruit. If burying, must bury deep. High temperatures attained through bagging and placing in sun may cause sterility in males. Similarly, some people think compost is a way to dispose of them.

Controls:

Entrust (spinosad) has shown good results. PyGanic (pyrethrum) has given poor results. Surround treatment is showing potential.

Exclusion nets:

-no SWD were found in traps

- no infested fruit
- no effect to fruit development
- leave net off for pollination

Canopy and Water Management:

Humidity is a key condition for this fly, so...

- bushier the plant, the more amenable it is to the fly
- leaky drip line should be patched or replaced
- allow a mulched surface to dry before irrigating again

Future research plans include:

- continued surveying
- habitat suitability
- available host plants & timing
- habitat structure