

Biocontrol of Canada Thistle Using Canada Thistle Stem-Gall Fly (*Urophora cardui*)

What is Biocontrol?

Biocontrol is the use of living organisms, such as insects, for control of certain weeds, such as Canada Thistle.

Why Biocontrol?

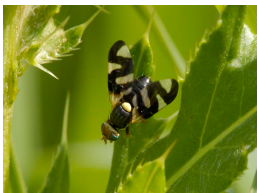
It is a method of control that is specific to the target plant, i.e. Canada Thistle, and will not move to economically important crops (pasture, etc.). It has the ability to infest plants in inaccessible areas. Once established the agents are self-perpetuating, and have the potential to migrate to other locations (thistle patches). Once established it is also a very cost-effective method that is often less expensive & labour intensive than chemical & mechanical methods of control. The goal of Canada Thistle biocontrol is to reduce plant vigor and its dominance in the landscape. It is not to completely eradicate the thistle, as it is very unlikely that the use of biocontrol agents will be able to achieve this.

How does the stem-gall fly work?

The stem-gall fly attacks the stem of the thistle plant, boring in and causing the plant to form gall tissue. Females lay their eggs on the apical meristem (tip) of developing shoots in the early summer, and larvae burrow into the shoots. Larval feeding triggers gall formation, which stresses the plant. The gall becomes a nutrient sink, directing nutrients away from the plant's normal metabolic & reproductive functions, lowering normal plant function and reproduction. Abnormally developed flower heads frequently occur above the gall, resulting in fewer flowers and lowered seed production. Galls vary in size, depending on the number of larvae present within. Galls may range in size from small (marble) to large (walnut/plum), containing anywhere from three or four larvae to upwards of 25 larvae. The flies overwinter in the gall as mature larvae and emerge as adults in the spring (around June) when the gall tissue deteriorates.



Gall-fly larvae & tunnels in gall



Adult gall-fly

What do they look like?

Adult flies are roughly the size of house flies, with a dark black body and a distinctive w-shaped banding pattern on their wings. The larvae are plump and pale coloured, and will be enclosed in the gall structure formed by the plant.

How do I know the plant has been infected?

Gall formation on the stems of the plant will be relatively obvious. The flies are very prolific and many galls will be produced over one site. It is very possible to have multiple galls present on one plant as well.



Gall formation on thistle plant

Can I move the flies to a new area?

Yes! The procedure to introduce flies to new areas of thistle is quite simple. After a hard freeze galls can be clipped off of infected plants and “dropped” into the new site. When the flies emerge in the spring they will begin their infestation in the new area. As the flies are quite prolific they will also travel some on their own, they have been seen to travel miles over the course of two-three years. Note: flies do best in dense stands of Canada Thistle, where water is available.

Can I use the gall-fly with other methods of control?

Large disturbances to the plant are not conducive to fly survival, so mechanical or chemical methods of control are not recommended.

The flies, however, do work very well when paired with another method of biocontrol, such as the Canada Thistle Stem-Mining Weevil. The flies and the weevils do not compete with one another, and they both attack the plant in different ways, resulting in better control over the weed compared to when each is used on it’s own.

How many do I need?

There is no hard and fast rule as to how many releases you would require for your thistle problem, but the typical recommendation is that one or two releases (trays/cartons) would be enough to start a population in the area.

It is very important to remember that the Gall Fly & the Weevil will not be quick fixes for your thistle problem. Biocontrol agents are a more permanent, self-perpetuating weed CONTROL tactic; use of these agents will not likely completely eradicate the thistle population.

For more information on either the Stem-Gall Fly or the Stem-Mining Weevil please contact:

Jessica Watson, BSc. Ag
Conservation Agriculture & Extension Program Manager
780-727-4424
conservationag@westcentralforage.com