

Aphids in Pulse Crops

By Bruce Barker, P.Ag

Pea aphids are most commonly found on field peas, alfalfa, and clovers, but lentils, faba beans, chickpeas, and dry beans may also be hosts.

The pea aphid adult is small, about 3 millimetres (1/8 inches) long, light green, and long legged. The insect may be wingless or have prominent, translucent wings. The pea aphid directly weakens the plant by sucking its sap. Aphids feeding on peas in the early pod stage can result in lower yields due to less seed formation and smaller seed size. Protein content and other quality issues do not appear to be affected.

Information from the Saskatchewan Ministry of Agriculture (Sask Ag) indicates that although pea aphids rarely survive winter in Saskatchewan, they may over winter as an egg attached to the stems or leaves of alfalfa or clover. The eggs hatch in early spring and the young aphids feed on the newly emerged alfalfa or clover plants. During May and June, depending on weather and host plant conditions, new generations of these insects may develop wings and, with the aid of wind currents, fly to other pulse fields. However, the majority of aphids in pea fields are blown in on warm southerly winds from the United States in June or early July.

Manitoba Agriculture says aphids take 5-50 days to move from birth to maturity, depending on the weather. The optimum temperatures for rapid development of pea aphids range from about 23-28°C. A summer female can produce 50-150 young during her life. If the host crop is cut during spring or summer, the winged aphids leave to search for new plants on which to live. In late September or October, winged males and wingless females are produced. These mate and the females lay eggs on leaves and stems. There may be 7-15 generations per year.

Early seeding can help to avoid infestations because the crops mature before the pest levels exceed economic thresholds. As plants mature they are less attractive to aphids.

Biological Control

Manitoba Agriculture indicates some biological control of aphids occurs by predators such as lady beetles, larvae of syrphid flies, minute pirate bugs, and damsel bugs. At least five species from a family of parasitic wasps known as Aphidiidae are known to attack pea aphids. The most common of these is a species known as *Aphidius ervi*. A fungal disease may sometimes reduce levels of pea aphids in warm, moist weather.

Peas

Scout for aphids by averaging the counts taken from at least five separate areas of the field. The Sask Ag economic threshold is when there are more than 10 aphids per plant during the period between formation of the 10th node and the appearance of the first flower. Pea aphid populations usually begin to decline in mid-to-late August due to drying of the crop, parasitic wasps, and diseases.

Manitoba Agriculture economic threshold recommendations vary depending on the value of the crop and cost of control. The economic threshold in peas is at \$0.21 per kilogram (\$5.71 per bushel) and average control cost of \$16.63-\$22.86 per hectare (\$6.73-\$9.25/acre) is 2-3 aphids per eight inch (20 centimetre) plant tip, or 9-12 aphids per sweep, at flowering.

Research in Manitoba found that insecticides applied when pods first form protects pea yield better than earlier or later applications. Control at the early pod stage provides protection through the pod formation and elongation stages, which are very sensitive to aphid damage. If aphid populations reach threshold levels, a single application of insecticide when 50 per cent of plants have produced some young pods will protect the crop against yield loss and can be cost-effective.

The following table relates the yield loss in peas for average aphid counts per sweep or per 20 centimetre tip of a field pea stem when about 25 per cent of the crop has begun to flower.

Table 1. Yield Loss in Peas for Average Aphid Counts Per Sweep

Aphids Per Sweep	Aphids Per Tip	Per cent Yield Loss
7	1	3.4
10	2	4.9
12	3	6.1
15	4	7.1
16	5	8.0
18	6	8.8
20	7	9.6
21	8	10.3

Source: Manitoba Agriculture

One insecticide application per season should give satisfactory control.

Lentils

For pea aphids in lentils, Sask Ag has adopted a nominal threshold from North Dakota. Scouting should start at the late vegetative stage through pod development. It recommends insecticide application at populations of 30-40 aphids per 180-degree sweep of a 38 centimetre (15 inch) diameter insect net, when few natural enemies are present, and when aphid numbers do not decline over a two-day period.

Faba Beans, Chickpeas, and Dry Beans

Pea aphids may be an occasional pest of faba beans, chickpeas, and dry beans, but little research into economic damage and thresholds has been conducted.

Insecticides

Numerous insecticides are registered to control aphids in pulse crops.

Table 2. Insecticides for Control of Aphids in Pulses in Canada

Insecticide	Crops	Rate/Acre	Pre-harvest Interval (days)
Matador®/ Silencer	Peas, faba beans, lentils	34 - 94 ml	14 (Matador); 21 (Silencer)
Movento®	Peas, lentils, chickpeas	75 - 111 ml	7
Malathion	Peas	445 ml	3
Lannate®	Peas	206 g	1
Lagon®/Cygon	Peas	110 - 170 ml	3 – 21
Voliam Xpress®	Chickpeas, faba beans, peas, lentils, dry beans	202 ml	14

Source: Saskatchewan Ministry of Agriculture's Guide to Crop Protection 2016
Always read and follow label directions.