



Pea aphid control

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The pea aphid is a major pest in vining and fresh market peas and attacks by this pest can result in loss of yield by flower spoilage causing the failure of pods to fill, and by virus infection. Serious yield losses up to 45% have been reported in vining peas for freezing. The aphids cause the losses in four ways: direct feeding, aphid transmission, production of honeydew that increases fungal contamination and attracting natural predators that contaminate the crop.

Action points

- Consider treating peas when 15% of plants are infested
- Apply insecticides during early flowering for best results
- Choose product with consideration to other pests present on the crops
- If Pea seed-borne mosaic virus (PSbMV) or Pea enation mosaic virus (PEMV) are a problem – aphids should be controlled as soon as colonies appear, particularly if this occurs before flowering
- Check product label for harvest interval

Description and life cycle

The pea aphid (*Acyrtosiphon pisum*) is bright green in colour with a pear-shaped body, long legs and long antennae (Figure 1). There are both winged and wingless forms, the winged females being 2.2–3.0 mm long with deep red eyes, while the wingless females are of similar form but have a smooth, shiny outer skin.

Colonies are formed quickly, smothering the plant (Figure 2), as the female bears living young at a rate of 15 per day in suitable conditions. There are a number of generations in the

pea aphid life-cycle. Eggs over-winter on forage crops such as lucerne and clover, hatching in the spring to give wingless stem mothers. These produce spring colonies of wingless females, which in turn produce winged females that move into the crop in summer. These migrants produce the colonies that damage the crop. As the pea plants deteriorate the colonies produce winged female migrants that move to other plants to produce new colonies. Later in the season winged females move to over-wintering host plants where they produce males and females that lay eggs on the winter hosts.



1. Pea aphids are bright green with a pear-shaped body, long legs and long antennae



2. Colonies form quickly affecting flowering

Damage

Damage caused by pea aphids to peas occurs in several ways. Direct feeding damage and virus transmission have the greatest potential impact. Damage caused by direct feeding when colonies are increasing in size rapidly during warm, humid conditions, can impact significantly on yield by causing flower spoilage and pod abortion. Smothering colonies of aphids can result in distortion of the growing point and undersized distorted pods which often fail to fill.

Several aphid transmitted viruses, particularly pea enation mosaic virus and pea seed-borne mosaic virus, are associated with infested crops, particularly if aphids are present before the onset of flowering.



3. Colonies of aphids can cause the growing point of the plant to be distorted and cause the pods to becoming undersized, distorted and failing to fill

During feeding the aphids produce honeydew, a sticky secretion that provides an ideal medium for colonisation by saprophytic fungi, and *Botrytis cinerea* infection can occur if the weather conditions are wet and favourable for the fungus. It can also lead to increased costs through the necessity of more frequent washing down of vining machinery during harvest.

Aphids also attract predators, particularly hoverflies (*Syrphidae*), the pupa of which may become serious contaminants during the harvesting of vining peas (Figure 4).



4. Natural predators such as hoverflies are attracted by the aphids but these can become serious contaminants of harvested peas

Virus diseases

Pea enation mosaic virus PEMV



5. Pea Enation Mosaic Virus causes plant to be come yellow and mottled with distorted leaves

The presence of this disease is seldom noticed before the approach of flowering, and often not until much later. PEMV is aphid transmitted and is likely to have a greater effect on

the crop if transmitted before flowering begins. PEMV causes vein clearing and the formation of translucent spots which are apparent when infected leaves are held up to the light. Development of stipules is often retarded and they remain very narrow. Leaflets are crinkled and necrotic spots may appear. Often the tops of the plants become yellow and mottled, with distorted leaves (Figure 5). Pods may be severely malformed and fail to fill. The appearance of enations, from which the disease gets its name, indicates an advanced stage of infection. Enations are small, irregular, protruding ridges of plant tissue which are found on the undersides of leaves and on pods. Terminal growth ceases, axillary buds disappear and flower set is impaired. In severe cases yield is greatly reduced. Efficient control of aphids reduces the risk of losses.

Pea seed-borne mosaic virus (PSbMV)

The virus is primarily seed-borne but is transmitted by a number of aphids including the pea aphid, peach-potato aphid, black bean aphid and potato aphid. The virus becomes established after using infected seed and is transmitted by winged aphids early in the spring. Symptoms include vein-clearing, narrowing and downward rolling of leaflets and shortening of internodes (Figure 6). Pods at the upper part of the plants may be stunted and appear to have a glossy green appearance. As the peas mature inside the pod a white blistering may develop giving the peas a 'tennis-ball' marking over the seed coat. The peas may produce a white fluffy growth on the inside of the pod in reaction to the virus (Figure 7).



6. Symptoms of the Pea seed-borne mosaic virus



7. PSbMV causes peas to produce a white fluffy growth on the inside of the pod

The virus affects quality in vining peas and it is important to maintain disease-free seed stocks. PSbMV can be detected in seed using a lab test, although not all infected seeds give rise to infected seedlings.

Control

Losses caused by aphids can be varied and considerable. If there is a light but general distribution in humid weather, or if breeding colonies are evident, then control measures are generally warranted. Peas should be treated when 15% of plants are infested. Best responses are found when aphicides are applied during early flowering. Always check labels for harvest intervals.

The choice of product should be made with consideration of any other pests that are present at the time, such as pea midge and pea moth. Timing of application can also affect the degree of virus infection as well as yield loss. In the case of pea seed borne mosaic virus and pea enation mosaic virus, aphids should be controlled as soon as colonies appear, particularly if this occurs before flowering.

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Table 1 Example pesticides approved for pea aphid control in vining peas (May 2012)

Product(s)	Active ingredient(s)	Minimum interval between application and harvest
Alert	<i>alph-cypermethrin</i>	1 day
Curfew	<i>cypermethrin (vining peas only)</i>	7 days
Decis	<i>deltamethrin</i>	none stated
Dovetail	<i>lambda cyhalothrin + pirimicarb *</i>	3 days
Hallmark Zeon	<i>lambda cyhalothrin</i>	None stated
Aphox	<i>pirimicarb</i>	3 days
Biscaya	<i>thiacloprid</i>	7 days
Fury 10 EW	<i>zeta-cypermethrin</i>	14 days
Savona	<i>Fatty acids</i>	None stated
Pyrethrum 5EC	<i>pyrethrins</i>	1 day
Majestik	<i>natural plant extracts</i>	None stated

* Final use date 31st July 2012