



VEGE *notes*

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Lettuce Aphid Threat

The lettuce aphid (also known as currant-lettuce aphid) is a major pest of salad crops, particularly lettuces.

Originating from Northern Europe, it was confirmed in Tasmania mid-March 2004.

A current theory is that it arrived in Tasmania from New Zealand via an extreme and unusual weather event in late January.

Lettuce aphid is now found in Europe (Belgium, France, Germany, Greece, Italy, Netherlands, Poland, Russian Federation, Switzerland, United Kingdom), North America (Canada, United States of America), South America (Argentina), New Zealand and Tasmania.

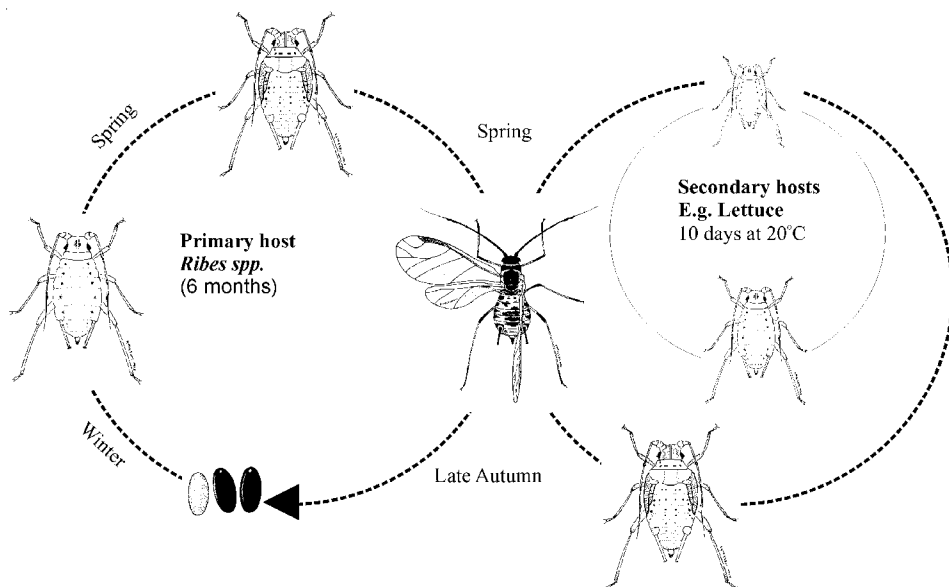
Eggs are only laid on *Ribes* spp., including red, white and black currants, and gooseberries.

A dangerous feature of the aphid breeding cycle is that most species do not need a male to reproduce. Parthenogenesis is the process that allows female aphids to give birth to smaller editions of themselves, bypassing sexual activity and egg laying.

Immature aphids are yellow-green and wingless while adults can be winged or wingless, ~2-2.5 mm in length, greenish to yellow-green with irregular narrow dark patches on their back.

Hosts

Lettuce (*Lactuca sativa*), *Ribes* (gooseberry, and red, black and white currants), endive, chicory, Hawksbeard (*Crepis*) and Hawkesweed (*Hieracium*) are all hosts that the lettuce aphid is found to breed on in New Zealand.



Life cycle of the Lettuce Aphid.

Nipplewort (*Lampsana*), Speedwell (*Veronica*), Sowthistle (*Sonchus*), Artichoke, Tobacco, Petunia and other members of the hairy thistle family are hosts recorded in international literature.

Damage

Lettuce aphid is primarily a contamination pest. In general, the direct damage from the aphid is limited on lettuces, though large numbers of aphids may stunt young plants and cause leaves to become pale in colour and slightly deformed.

The Bottom line

- Lettuce aphid has been confirmed in Tasmania
- Hosts include lettuce, gooseberry currants and some weeds
- It is a contamination pest
- Management is using resistant lettuce varieties or chemical control
- Confidor® 200 SC has been issued a permit as a lettuce aphid control

Lettuce head contamination by lettuce aphid makes them unsaleable. Lettuce aphid can also transfer cucumber and lettuce mosaic virus.



Contamination damage caused by Lettuce Aphids.

Management options

- 1. Resistant varieties** - Some seed companies have utilised an aphid resistance gene in some of their lettuce varieties. Lettuce aphid does not feed or reproduce and immatures do not reach adulthood on resistant plants.

Other seed companies are now also using this gene and have a range of fancy lettuce ready for commercialisation, but head lettuce varieties are not yet available.

- 2. Source control** - Care should be taken that lettuce aphid is not introduced via transplants or movement of other plant material.
- 3. Monitoring** - Crops need to be closely inspected. In seedlings and prehearted lettuce, attention needs to be paid to the innermost leaves and in folds or crinkles in the leaf. Once the lettuce has hearted some destructive sampling is needed. Since lettuce aphid may occur non-uniformly across paddocks, a number of widely dispersed sites need to be sampled. Weed hosts should be sampled, including Hawksbeard and wild lettuce if nearby.
- 4. Beneficial insects** - Aphids are eaten by a range of beneficial insects which are likely to be more efficient at reaching and killing them than insecticides, particularly in hearted lettuce. However the use of broadspectrum insecticides is likely to kill many beneficials.
- 5. 'Soft' foliar insecticides** - Pirimicarb (Pirimor®) is a 'soft' aphicide registered for use on aphids in lettuce in Australia.

Although resistance has been reported to pirimicarb in Europe, tests in NZ show that their lettuce aphid is not resistant. There are some newer potentially 'softer' chemistry that is not currently available that may get permits or registration.

- 6. Broadspectrum insecticides.** Dimethoate, maldison, methidathion (e.g. Supracide®), and pyrethrins are the other registered aphicides for lettuce in Australia. In Europe resistance to cypermethrin, dimethoate, and endosulfan has been recorded.

Broadspectrum insecticides are undesirable in an IPM system as they kill most, if not all, beneficial insects.

- 7. Seedling drenches.** An emergency permit has been granted for imidacloprid (Confidor®) as a seedling drench in lettuce. Seedling drenches have been proven to control lettuce aphid for the life of the crop in New Zealand. Imidacloprid seedling drench is not fully compatible with IPM programs. Overuse of imidacloprid for lettuce aphid control raises concerns with resistance developing. A resistance management strategy is being developed and should be followed when introduced.
- 8. Sanitation.** Control surrounding weeds. Any infested lettuce, including recalled product, should be buried as soon as possible.
- 9. Post harvest washing.** Washing of head lettuce will not disinfest. Loose leaf lettuce washing processes with fine water filtration systems can reduce numbers of aphids present in packed lettuce.

Growers with a strong IPM strategy and good populations of beneficial insects are in a better situation to manage lettuce aphid populations, particularly when they first arrive in a district.



A winged Lettuce Aphid.

Confidor® 200 SC (imidacloprid)

Lettuce Aphid permit

The Australian Pesticide and Veterinary Medicines Authority (APVMA) has issued a permit for Confidor® 200 SC Insecticide (200 g/L imidacloprid) to control lettuce aphid (*Nasonovia ribis-nigr*) in lettuce.

A copy of the permit can be obtained from the APVMA website:

www.apvma.gov.au/permits/permits.shtml

The information in this document should be reviewed in conjunction with the permit:

EMERGENCY USE PERMIT PERMIT NUMBER – PER7416

This permit is valid from 24 March 2004 to 30 June 2005. All persons who require Confidor for lettuce propagation and production can use the permit.

The only product that can be used is Confidor® 200 SC Insecticide (200 g/L imidacloprid).

Confidor is a Group 4A Insecticide.

Directions for Use

APVMA has issued several 'Critical Use Comments' in relation to this permit, which must be strictly adhered to whenever the permit is used.

- Apply only one application via spray or drenching equipment, in a sufficient volume of water to ensure complete coverage or drenching of the cell (seedling and soil). Ensure even distribution.
 - Only apply imidacloprid seedling drench to lettuce aphid susceptible varieties. Imidacloprid should not be used on lettuce aphid resistant varieties.
 - It is vital for the application process to be carried out correctly, otherwise optimum control may not be obtained.
 - Each plant cell (seedling and soil) must be saturated with the Confidor solution, but not to run-off.
- The higher rates may be more effective under conditions highly favourable to aphid infestation.
 - Information obtained from New Zealand shows that 35 to 55 mL per 1000 plants is effective in controlling lettuce aphid, but in aphid favourable conditions the higher of these rates is most effective.
- Application should occur as close to the time of planting out as possible. If watering is required, avoid or minimise leaching from the cells.
 - Confidor treatment applied to each plant cell must remain within the cell until the seedling has planted out.
 - The seedling must take up the drenching solution from the cell soil to maximise the concentration of chemical within the seedling.
 - Where possible, apply Confidor within 24 hours prior to transplanting.
 - If treated, seedlings require watering prior to transplanting. Ensure that only enough water is applied to wet the cells without leaching through the cell.
- Users must take care to minimise potential run-off, either during or following application. Only apply sufficient solution to fill the cell.
 - Run-off must be avoided or minimised, as this represents product not taken up by the seedling for lettuce aphid control.
 - If run-off occurs, ensure the solution is captured, retained and disposed of appropriately.
- Persons handling treated trays and seedlings should wear chemical resistant gloves.
 - Nurseries supplying imidacloprid treated seedlings should advise purchasers that the seedlings have been treated and of the need to wear chemical resistant gloves.
- Only a single application should be made to any one batch of seedlings.
 - If there are delays in planting out of seedlings, another application of imidacloprid provides no additional control.
- No other application of Confidor or other Group 4A Insecticides should be made during the entire life of the crop.
 - All lettuce seedlings purchased from nurseries should be identifiable as being treated with imidacloprid. This will determine aphid management actions by the grower.
 - To minimise potential imidacloprid resistance developing, no other Group 4A Insecticides should be used for the life of the crop.

- Confidor is the only Group 4A Insecticide currently permitted for use in lettuce.
- If growers are required to control Lettuce Aphid or other aphids during the life of the crop, insecticides such as dimethoate and pirimicarb should be used. Always monitor the effectiveness of these insecticides.

APVMA has also issued several 'Advisory information' points in relation to this permit, which must be strictly adhered to.

- The use permitted by this permit alone will not prevent the general movement, spread or colonisation of Lettuce Aphid.
- Growers should regularly monitor crops and other host plants for lettuce aphid and contact their local Agriculture Department for information about correct sampling techniques.
- Monitoring will determine the need for the imidacloprid seedling drench treatments on susceptible crops.
- If lettuce aphid has not been detected in your area, it may be possible to grow susceptible varieties successfully. Also consider growing lettuce aphid resistant varieties that do not require imidacloprid.
- Growers should develop and implement IPM and Insecticide Resistant Management (IRM) strategies to complement the seedling drench treatment.
- In New Zealand and Tasmania soft chemical options, encouraging aphid predators, play a vital role in the control of lettuce aphid. This allows for minimal and selective chemical use.
- It is essential that imidacloprid is only used once for each crop to minimise resistance developing. Use other products (non Group 4A insecticides), if foliar control is required.
- To minimise the risk of resistance developing, growers using imidacloprid should aim for an imidacloprid free growing period at some stage during the year.

According to research from New Zealand, imidacloprid will provide season long control of lettuce aphid when used as a seedling drench. Under lettuce aphid favourable conditions the high rate (55 mL per 1000 plants) is required.

The Confidor seedling drench treatment has not been evaluated under Australian conditions and may provide the following control, based on limited information:

- Season long control (achieved in New Zealand under cool growing conditions)
- Imidacloprid maybe less effective in warmer climates

A withholding period is not required for the use of imidacloprid as a seedling drench, when used as directed.

APVMA has set a temporary MRL of 5.0 mg/kg for imidacloprid in head and leafy lettuce.

This permit is valid in all states except Victoria, as their 'control-of-use' legislation does not require a permit to legalise this off-label use.

Contact

If you find suspect aphids in an area where lettuce aphid is not previously known, clearly mark the collection site, so it can be easily found later, and call either your:

1. Vegetable Industry Development Officer
2. Local department of agriculture or primary industry
3. Exotic Plant Pest Hotline 1800 084 881

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