Insect pest - aphides

C F.H Jenkins

Department of Agriculture

Follow this and additional works at: https://researchlibrary.agric.wa.gov.au/journal_agriculture3

Part of the Entomology Commons

Recommended Citation
Available at: https://researchlibrary.agric.wa.gov.au/journal_agriculture3/vol1/iss5/17

This article is brought to you for free and open access by Research Library. It has been accepted for inclusion in Journal of the Department of Agriculture, Western Australia, Series 3 by an authorized administrator of Research Library. For more information, please contact jennifer.heathcote@agric.wa.gov.au, sandra.papenfus@agric.wa.gov.au, paul.orange@dpird.wa.gov.au.
THE members of the aphis family are remarkable creatures both in structure and habits. They are practically world-wide in their distribution and despite their small size and apparent fragility they thrive under a wide variety of conditions and are among the most prolific breeders in the animal kingdom.

All the pest species in Australia have been introduced from other parts of the world, and there are only a few rare forms actually native to this continent. The introduced species, however, have thrived so well that they can be counted among the most serious pests with which the gardener and horticulturist have to contend.

Although one species of aphis will often attack quite a wide variety of hosts, generally a single species or group of plants is favoured, thus the different species are known as cotton aphis (*Aphis gossypii* Glov.); cabbage aphis (*Brevicoryne brassicae* (L.)); green peach aphis (*Myzus persicae* (Sulz.)); rose aphis (*Macrosiphum rosae* (L.)); strawberry aphis (*Capitophorus fragariae* (Theob.)); black citrus aphis (*Toxoptera aurantii* (Boy)); according to the particular plant usually attacked.

On account of their delicate structure aphides do not thrive under extreme conditions of heat or cold, neither do they like heavy rain. This accounts for the fact that in most districts it is mainly in the spring and autumn that heavy aphis plagues appear. No one can observe the occurrence of a severe aphis infestation without marveling at the astounding rapidity with which the creatures reproduce. This rapid rate of reproduction renders the aphis a particularly difficult insect to combat and means that control measures must be very thoroughly applied if rapid re-infestations are not to occur.

**GENERAL DESCRIPTION**

Although differing in size and colour according to species, aphides, often known as plant lice, can be easily recognized by their soft delicate structure and other characteristics. They are sluggish in their movements, have rather long legs, and are usually found clustered on the host plants. The wings when present are clear. The abdomen is usually rather swollen and often carries a pair of horns or cornicles from which a sweet honey-dew much prized by ants is excreted.

The mouth parts are produced into a long thin sucking tube, rather like the proboscis of a mosquito, and by means of this thin tube the plant tissue is pierced and the sap imbibed.
CONTROL
Blowfly Strike—

USE

B.K.B
D.D.T

BLOWFLY DRESSING

With every succeeding season Sheep Farmers find that there is only one Blowfly Dressing to use — David Grays B.K.B.-D.D.T.

This efficient dressing scores over all others, because in rapidly killing the maggots it not only prevents them from crawling on to near-by areas and re-establishing themselves there, but it so affects them that even if they are able to drop off the sheep they cannot complete their development into flies.

Before using B.K.B.-D.D.T. shear the struck area of the animal to ensure that the full extent of the strike is exposed, and pour on sufficient of the Dressing to saturate the whole area thoroughly; the most satisfactory method to ensure thorough penetration is by lightly dabbing in B.K.B.-D.D.T. with the hand or brush.

David Grays Blowfly Dressing is non-irritant and contains D.D.T. in sufficient strength to safeguard the sheep against restrike and is absolutely 100 per cent. reliable to kill all flies coming in contact with the dressed animals.

Manufactured by
the Chemical
Division of —

DAVID GRAY & CO. LTD., 10 RAILWAY PDE., WEST PERTH

Please mention the "Journal of Agriculture, W.A." when writing to advertisers
This method of feeding should be carefully noted for it is a knowledge of an insect's feeding habits and mechanism that is most essential in determining control measures.

**LIFE HISTORY**

In order to understand how the remarkable rate of reproduction is accomplished it is necessary to have a detailed knowledge of the general life history of the aphis. After examining a cluster of aphides on a rose or cabbage leaf, one will notice that all the insects are not identical. Some are larger than others, some are winged and some are wingless.

The large wingless ones are known as stem-mothers. They are females capable of giving rise to living young without having previously been fertilised. The power to reproduce in this manner is known as parthenogenesis. The young from these parthenogenetic stem-mothers grow rapidly and in a few days can in turn produce more living young. Every now and then, winged females are developed, and have the same unusual reproductive powers as their wingless parents. These fly to other plants and so spread the infestation.

In cold countries, as winter approaches, male and female aphides are developed, and fertilised eggs are laid on the host plants. These eggs last over the winter and give rise to stem-mothers next spring.

In Western Australia it is doubtful whether the weather is ever severe enough to bring about egg-laying, and the insects carry over from one season to another by means of the few females which survive in sheltered spots.

The life history of many aphides in Europe is complicated by the inclusion of alternate host plants into the cycle, or by a migration of the population to a
subterranean life on the roots. Two local species the black peach aphis (*Anuraphis persicae-niger* (Smith)) and the woolly aphis (*Eriosoma lanigerum* (Housm.)) have root-infesting forms but the relatively simple life history of most Western Australian aphides can be attributed to the mild climate of this State.

Colonies of aphides on cabbage leaf.
—Photo. U.S. Dept. of Agriculture

**CONTROL**

Due to the fact that the aphis is a sap-sucking insect and that it does not actually eat the foliage, ordinary poisonous sprays and dusts are useless as controls. On account of the insect's soft and delicate structure, however, contact insecticides are very effective.

**Sprays.**—The chemical most widely used against aphides is nicotine, usually sold under the name of Nicotine Sulphate or "Black Leaf 40." In using nicotine sprays it is essential to add a spreader and activator such as soap or white spraying oil and to apply the spray at a high pressure. Nicotine will give the best results when used on a bright sunny day.

The formula recommended for general use is given below. The quantities shown in brackets are those which may be conveniently used by backyard gardeners or others who only require small quantities of the spraying solution.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nicotine Sulphe...</td>
<td>1½ pints (2 teaspoonfuls)</td>
</tr>
<tr>
<td>White Spraying Oil</td>
<td>1 gallon (3 tablespoonfuls)</td>
</tr>
<tr>
<td>Water</td>
<td>100 gallons (1 gallon)</td>
</tr>
<tr>
<td>Soap</td>
<td>4 pounds (1oz.) may be used instead of white spraying oil</td>
</tr>
</tbody>
</table>

When citrus and other hardy trees are requiring treatment the White Oil strength may be increased from 1:100 to 1:40. Such a concentration will also prove effective against most scale insects found infesting oranges and lemons.

**Dusts.**—Where it is impracticable to spray, dusts containing nicotine and derris have been used with good results.

Two mixtures once very popular were:

1. Nicotine Sulphate ... 1 part
   Slaked Lime ........ 16 parts

2. Tobacco Dust .... 1 part
   Slaked Lime .... 1 part

**New Insecticides.**—Under this heading may be grouped DDT, Benzene-hexachloride (BHC) or Gammexane, HETP or "Hexone" (Hexaethyltetraphosphate), Parathion or E.605 ("Folidol" and "Phosphone") and the systemic insecticides.

Of the list outlined "Hexone" and Parathion are probably the most generally useful against aphis, although all
are effective against some species. Concentrations of 1 part to 1,600 parts of water have been widely recommended but it is usually desirable to follow the dilution rates recommended by the manufacturers as the amount of active ingredients may vary with different brands.

The use of DDT for aphid control is not to be recommended except under special circumstances as the insecticide kills many useful parasites and may lead to an increase in some scale insects and mites. Where for any reason DDT is desired for aphid control, emulsion types are recommended. Several workers have reported them superior to the wettable powders and the concentration suggested is 0.1%.

A combination of insecticides particularly useful to market gardeners is a dust consisting of 2% DDT and 2% BHC. The former satisfactorily controls chewing insects such as cabbage caterpillars and the BHC reduces the aphid population.

"Hexone" and Parathion were both developed during the war to alleviate a world shortage of nicotine sulphate and have proved most effective substitutes for the tobacco extract. The insecticide group (organic phosphates) to which "Hexone" and Parathion belong is very toxic to the higher animals and so must be used with great caution. Gloves should be worn when mixing the sprays to prevent any concentrates coming into contact with the bare skin. When spraying, precautions should be taken to see that the spray mist is not inhaled and that clothing does not become saturated with spray liquid. Although a very effective contact insecticide, "Hexone" has little residual effect and the toxicity of the mixture deteriorates rapidly once it is diluted and exposed to the air. Parathion on the other hand has an appreciable residual action and also some of the properties of a systemic insecticide. This renders Parathion the more dangerous of the two preparations and means that it should not be applied to fruits or vegetables later than a month before picking.

The systemic insecticides depend for their efficiency on the fact that the materials enter the sap stream and accumulate in the vigorously growing portions of the plant. Systemic materials may be sprayed on the foliage or watered around the roots. They are extremely selective in their action and, of course, only affect sap-sucking insects.
This is of great importance as it allows ladybirds and wasp parasites to go unmolested and continue their work of scale and aphis control.

**Biological Control.**—There are many excellent examples of the biological control of aphisides. Ladybirds feed readily upon most species, and a number of tiny wasps lay their eggs into and develop within the aphis. The cabbage aphis is one variety largely controlled by a wasp parasite introduced into this State in 1907 by the late Mr. George Compere.

The parasitised aphisides may be distinguished from the healthy insects by their bloated appearance and light colour, and later by the tiny hole in the back from which the wasp has emerged.

**Cultural Methods.**—All weeds likely to harbour aphis should be destroyed and especial attention given to weeds closely related to the crop being grown. For instance, wild radish and wild turnip will harbour cabbage aphis, and may easily be responsible for starting an outbreak in a commercial crop.

When cutting cabbages and cauliflowers the whole plant should be destroyed, so that the butt is not left to breed further pests. Similarly when any crop is finished the old plants should be got rid of as soon as possible, for carelessness in this direction leads to the dissemination of diseases and insect pests of all kinds.

---

**KEEP YOUR JOURNALS**

Here at the production end, we are sparing neither expense nor effort in making the "Journal of Agriculture" a publication which will help you in your farming operations.

We suggest that the Journal is worth keeping and that a year's issue will make an attractive and useful volume for your library—a volume that is full of sound factual information, attractively presented.

Arrangements have been made for the compilation of a comprehensive index to be incorporated in the December issue—a feature which will greatly enhance the value of the Journal as a work of reference.