

# The Royal Horticultural Society

## Entomology Advisory Leaflet

February 2012



## Pesticides for Amateur Gardeners

### **ALWAYS READ THE LABEL - USE PESTICIDES SAFELY**

All garden chemicals on sale in the United Kingdom are safe when used according to the manufacturers' instructions. Every proprietary product subject to regulations made under the Food and Environment Protection Act (1985) has been issued with a MAPP or HSE number which will be found on the pack. Some products in this leaflet, such as pheromones, sticky traps, plant oils and extracts and fatty acids, do not require MAPP or HSE numbers. To check whether products with MAPP numbers (or the older MAFF numbers) are still legal to use, see <https://secure.pesticides.gov.uk/garden/prodsearch.asp>. For products with HSE numbers, see [www.hse.gov.uk/biocides/copr/approved.htm](http://www.hse.gov.uk/biocides/copr/approved.htm).

To minimise any possible harmful effects arising from misuse of pesticides the following general rules should be observed:

- Use chemicals only when they are really necessary. Some pests can be kept down by good cultivation techniques such as rotation of crops, destruction of crop residues, or hand removal of pests. Encouraging natural enemies or supplementing them with biological controls will reduce the need for spraying. Identify the pest correctly in order to apply appropriate control measures.
- Select a chemical that is recommended for the particular purpose you have in mind; always read the label information before choosing a product. Do not purchase large amounts of pesticides that will take many years to use up. If only a few plants require treatment, a ready-to-use spray bottle is likely to be the best answer.
- When spraying an edible plant, check that the pesticide is suitable for that plant and note the instructions for the period of time that must be left between treatment and harvesting the plants. Also note the maximum number of applications permitted per growing season if this is indicated.
- Read the manufacturer's instructions and check for any limitations or specific precautions you should take. As an added precaution you could wear rubber gloves, particularly when handling the concentrate and applying the pesticide.
- Follow all the manufacturer's instructions and apply the chemical at the stated rate and in the manner described. It is a legal requirement to comply with the Statutory Conditions indicated on the label or packaging.
- Spray at the correct times and intervals as this is often crucial for the control of a pest.
- It is illegal to mix two chemicals together to give a combined spray unless the manufacturer indicates that this is permissible. Some products are sold as combined insecticide/fungicide sprays for use on roses and other ornamental plants.
- Avoid contact with exposed parts of the body, particularly the eyes and mouth. Wash off any splashes immediately with water.
- Avoid breathing in dusts or sprays by standing up-wind of the plants being treated. Wash after using pesticides.

- Make sure no children or pets are nearby when spraying and keep them away until the foliage is dry.
- All insecticides pose a risk to fish, amphibians and other pond life. Keep pesticides, other than those approved for use in ponds, away from ponds, ditches, streams and other water bodies.
- Do not smoke, eat or drink while applying pesticides.
- Spray efficiently to wet the plants without excessive run-off or drift, but thoroughly spray the stems, buds and the underside of leaves, as well as the upper surface.
- Make up only sufficient diluted pesticide for the task. Left-over spray and other garden chemicals must not be poured down drains or toilets.
- Rinse used-up spray concentrate containers three times and add the washings to the spray mixture. Clean empty containers can be disposed of as household waste.
- Dispose of unwanted or out-of-date pesticides by taking them to a manned local authority household waste site where they should be handed over to the staff. For information on waste disposal sites see [www.pesticidedisposal.org](http://www.pesticidedisposal.org).
- Do not spray plants that may be damaged by the chemical or allow spray to drift on to them. Because of the large numbers of species and cultivars of ornamental plants grown in gardens and greenhouses, sensitivity to products should always be checked on a small area or number of plants in the first instance.
- Do not spray or dust in wet, windy, completely calm or hot sunny weather, or when plants are suffering from drought. Spray in the early morning or late afternoon or evening.
- Do not spray open blooms because of the danger to bees, butterflies and other flower visitors.
- Clean all equipment after spraying. Do not apply pesticides with apparatus that has been used for weedkillers.
- Store chemicals in a cool, safe place away from children and pets, keeping them tightly closed and in their original containers.

This leaflet is not a complete list of every brand name available to amateur gardeners for controlling plant pests but it includes most of the widely available products. Some active ingredients listed in this leaflet under their manufacturers' names may be available from chain store outlets as "own brand" products with the retailers' own labelling. It is not practicable to list all of these. Check the label of the crop protection product carefully to confirm the active ingredient. Some products contain more than one active ingredient and may therefore have a wider range of uses than that given here for the main ingredient. These extra uses and any precautions can be checked by referring to the comments given elsewhere in the leaflet concerning the relevant compounds.

Chemicals marked with \* are fungicides, further details of which are given in another leaflet, 'Choice of Fungicides'. Products marked # are ready to use sprays diluted for immediate use. The term 'sprays' includes products sold as wettable powders. Pesticide-resistant strains of some aphids, thrips, glasshouse red spider mite and whitefly may occur.

The following list of retail packs has been drawn up to assist gardeners in choosing pesticides. Proprietary products sold for the control of pests are listed under the common chemical names of their active ingredients. Manufacturers of pesticides subject to regulations made under the Food and Environment Protection Act are obliged by law to print the name of the active ingredient on the label but this may appear in small print. Please note that inclusion does not necessarily indicate a recommendation by the RHS for the uses specified on the product. It is emphasised that the RHS is not

The lists of pests controlled given under the names of the active ingredients are for guidance only. The instructions for the products' use must be read carefully and followed. Harvest intervals (the period of time that must elapse between treatment and harvesting fruits, vegetables or culinary herbs) are not given in this leaflet and reference must be made to the product label. Products with the same active ingredient may vary in the range of pests controlled and the plants on which they can be used.

## NATURAL (ORGANIC) INSECTICIDES

**Natural pyrethrum/pyrethrins** Derived from the flowers of *Tanacetum cinerariifolium*. Controls many insects including whitefly, small caterpillars, aphids, thrips, leafhoppers, capsids, ants and some beetles.

DUSTS      **Py Insect Killer Powder**  
**Growing Success Ant Killer Powder**

SPRAYS

- #Bayer Organic Bug Free
- #Bayer Natria Bug Control
- #Doff Pest Spray
- #Doff Greenfingers Organic Pest Spray
- #Doff Greenfly and Blackfly Killer
- #Nature's Answer Natural Fungus and Bug Killer (with sulphur\*) - marketed by Scotts

SPRAYS      **Growing Success Winter Tree Wash**  
**Vitax Winter Tree Wash**

**Vitax Organic 2 in 1 Pest & Disease Control Concentrate**  
**Agralan Whitefly Killer**  
**Bug Clear for Fruit & Veg** – marketed by Scotts  
**#Vitax Organic 2 in 1 Pest & Disease Control**  
**#Bayer Multirose 3 in 1 (with myclobutanil\*)**

**Sulphur** A naturally occurring mineral available as a fumigant for disinfecting glasshouses. The vapours emitted by burning sulphur are extremely irritating to eyes, nose and throats, and will corrode iron. Plants in leaf are killed by the vapours so this product can only be used to fumigate an empty greenhouse.

SMOKE                    **Deadfast Greenhouse Sulphur Candle**  
                              **Vitax Sulphur Candle**

**Urea/"Foliar lattice"** A foliar feed that controls small insects and mites, such as whitefly, aphids, mealybugs and red spider mites, by blocking breathing pores or gumming the pests to the leaf surface.

SPRAY                    **SB Plant Invigorator**

**Spinosad** A microbial extract used against ants in and around buildings. The 'Ant Stop' products can be applied as granules or mixed with water and poured into ant nests.

GRANULES              **Ant Stop! Granules** - marketed by Scotts  
                              **Ant Stop! Singles** - marketed by Scotts

BAIT                      **Vitax Nippon Ant Killer Liquid**  
                              **Vitax Nippon Ant Bait Station**

## **SYNTHETIC INSECTICIDES : CONTACT ACTION**

Most pesticides in this group break down quite quickly to harmless substances and there is no accumulation of undesirable residues in the environment. All types should be regarded as being harmful to bees and fish.

**Abamectin** A contact insecticide only available in combination with a ready to use formulation of a systemic insecticide, thiamethoxam. It can be used on container-grown ornamental plants in houses and greenhouses and it controls red spider mites and thrips (see thiamethoxam for additional pests controlled).

SPRAY                    **#Westland Plant Rescue Bug Killer Ornamental Plants** (with thiamethoxam)

**Bendiocarb** Available as a dust against wasp nests, or ants, woodlice and earwigs in or near buildings.

DUSTS                    **Doff Woodlice Killer**  
                              **Doff Wasp Nest Killer**  
                              **Rentokil Ant & Insect Killer Powder**  
                              **Rentokil Wasp Nest Killer Powder**

**Fipronil** Available as a bait for use against ants.

BAIT                      **Ant Stop! Bait Station** – marketed by Scotts

**Synthetic pyrethroid compounds** Effective against aphids, whiteflies, leafhoppers, thrips, beetles, ants, small caterpillars and crawling insects. By making alterations to the molecular structure of natural pyrethrum, synthetic pyrethroid compounds, such as **cypermethrin**, **phenothrin**, **lambda-cyhalothrin**, **deltamethrin**, **tetramethrin** and **permethrin**, have been developed. Permethrin, lambda-cyhalothrin, deltamethrin and cypermethrin, while retaining the very low mammalian toxicity of other pyrethroids,

can remain active against some pests for up to two to three weeks. Other pyrethroids lose their activity after a few days. Some products can be used on listed food plants close to harvesting.

**Deltamethrin** A spray concentrate and ready to use for controlling aphids, whitefly, caterpillars, codling moth, plum moth, tortrix moths, raspberry beetle, flea beetles, weevils, sawflies, apple and pear suckers, leafhoppers, capsid bugs, scale insects and mealybugs on ornamental plants and a wide range of listed fruits and vegetables. Also a ready to use spray and aerosol for controlling ants and other crawling insects in and around buildings.

SPRAY            **Bayer Ultimate Fruit & Vegetable Bug Killer**  
**Bayer Sprayday Greenfly Killer**  
**#Bayer Ultimate Fruit & Vegetable Bug Killer**  
**#Ant Stop! Gun** – marketed by Scotts  
**#Westland Erazo Ant Killer**

AEROSOL        **Dethlac Insect Lacquer**

**Lambda-cyhalothrin** A spray concentrate and ready to use spray for controlling aphids, capsid bug, thrips, whitefly, beetles, caterpillars, pea moth, pea and bean weevil, sawflies, leaf curling midges, carrot fly adults. Can be used on ornamental plants and a wide range of listed fruits and vegetables.

SPRAY            **Westland Plant Rescue Fruit & Vegetable Bug Killer**  
**# Westland Plant Rescue Fruit & Vegetable Bug Killer**

**Cypermethrin** Ready to use sprays for use against ants in and around buildings. Also sachets for dissolving in water; can be watered into lawns.

**Vitax Nippon Ant Killer Sachets**  
**#Vitax Nippon Ant & Crawling Insect Killer Spray**  
**#Doff Ant & Crawling Insect Killer Spray**  
**#Rentokil Ant & Crawling Insect Spray**

**Permethrin** Dusts for controlling woodlice, ants and other crawling insects in and around buildings. Smoke formulations for insect pests in roof spaces, garages and garden sheds, or for use against aphids, whitefly and other insects in greenhouses.

DUSTS            **Vitax Nippon Ant Killer Powder**  
**Vitax Nippon Woodlice Killer**  
**Vitax Nippon Wasp Nest Powder**  
**Doff Ant Killer**  
**Westland Erazo Ant Killer Powder**

SMOKE            **Deadfast Greenhouse Smoke Generator**  
**Deadfast Garage and Loft Smoke Fumigator**  
**Fumite Insect Killer** (not for use in greenhouses)

**Other pyrethroids** Various active ingredients for use in buildings (not on plants) for controlling wasp nests, ants and other household insects.

AEROSOLS        **Doff Flying and Crawling Insect Killer** (phenothrin + tetramethrin)  
**Bayer Foaming Wasp Nest Destroyer** (phenothrin + tetramethrin)  
**Vitax Nippon Wasp Nest Destroyer Foam** (permethrin + tetramethrin)  
**Rentokil Wasp Nest Destroyer Foam** (phenothrin + tetramethrin)  
**Bayer Kybosh** (permethrin + pyrethrum)  
**Vitax Nippon Ant and Crawling Insect Killer** (permethrin + tetramethrin)  
**Doff Foaming Wasp Nest Destroyer** (permethrin + tetramethrin)  
**Westland Erazo 24hr Wasp Nest Destroyer** (permethrin + tetramethrin)

GEL BAIT **Rentokil Ant Killer Gel** (phenothrin)

## Doff Ant Bait Station (phenothrin)

### SYNTHETIC INSECTICIDES : SYSTEMIC ACTION

Systemic insecticides are absorbed into plants through the roots and/or foliage. Specified pests are killed when they feed on the treated roots and/or foliage.

**Acetamiprid** A systemic and contact action insecticide for use as foliar sprays on ornamental plants and tomato aubergine, peppers, potato, lettuce, apple, pear, cherry and plum. Also as a compost drench on ornamental plants. The compost drench formulation is primarily for vine weevil grubs on container-grown plants. This insecticide also controls aphids, whitefly, scale insects, mealybugs and thrips. The spray formulations can also be used against red spider mite, lily beetle and caterpillars. Also available in combination with fertiliser sticks for application to the compost of pot plants. Sprays containing the fungicide triticonazole also control mildew, rust and blackspot on roses.

SPRAY                      **Bug Clear Ultra** (concentrate) – marketed by Scotts  
                                 **Rose Clear Ultra** (+ triticonazole\*) – marketed by Scotts  
                                 **#Bug Clear Ultra Gun** – marketed by Scotts  
                                 **#Rose Clear Ultra Gun** (+ triticonazole\*) – marketed by Scotts

COMPOST DRENCH        **Bug Clear Ultra Vine Weevil Killer** – marketed by Scotts

FERTILISER STICKS       **Bug Clear Ultra for Pots** – marketed by Scotts

**Imidacloprid** An aerosol formulation of imidacloprid + methiocarb controls aphids, whitefly, thrips, red spider mites, mealybugs, scales and lily beetle on ornamental plants. A lawn-treatment product is available for controlling chafer grubs and leatherjackets in lawns and other grassed areas.

SPRAY                      **Bayer Provado Lawn Grub Killer**

AEROSOL                   **Bayer Provado Ultimate Bug Killer** (with methiocarb)

**Thiacloprid** A systemic insecticide with similar properties to imidacloprid. For use as a compost drench to control vine weevil grubs, aphids and glasshouse whitefly on container-grown ornamental plants. Also available as a spray concentrate and ready to use spray on ornamental plants and a wide range of listed edible fruits and vegetables. This controls aphids, woolly aphids, whitefly, scales, mealybugs, leafhoppers, thrips, capsid bugs, small caterpillars, sawfly larvae and leaf beetles, including lily beetle, viburnum beetle and flea beetles.

COMPOST DRENCH        **Bayer Provado Vine Weevil Killer 2**

SPRAY                      **Bayer Provado Ultimate Bug Killer 2** (concentrate)  
                                 **#Bayer Provado Ultimate Bug Killer Ready to Use**  
                                 **#Baby Bio House Plant Insecticide**  
                                 **#Bayer Multirose Bug Killer**

**Thiamethoxam** A systemic insecticide for the control of aphids, scale insects, whitefly, thrips, mealybugs and leaf beetles on ornamental plants growing in containers. Available as a spray concentrate, which can also be applied as a compost drench on pot plants to control fungus gnats/sciarid larvae, or as a ready-diluted formulation that also contains abamectin. This combined pesticide additionally controls red spider mite on container-grown house plants and in glasshouses.

SPRAY                      **Westland Plant Rescue Bug Killer Ornamental Plants** (concentrate)  
                                 **# Westland Plant Rescue Bug Killer Ornamental Plants** (with abamectin)

### SLUG CONTROL CHEMICALS

In addition to the chemicals listed below for controlling slugs and snails, there are also products available that deter or act as a barrier to these pests. Further details of these products are given in the advisory leaflet on "Slugs and Snails".

**Ferric phosphate** A pelleted bait for use against slugs and snails. Less toxic to birds and mammals than metaldehyde and is approved for use by organic growers around ornamental and edible plants.

PELLETS            **Growing Success Advanced Slug Killer**  
                         **Bayer Natria Slug and Snail Control**  
                         **Bayer Organic Slug Bait**  
                         **Vitax Slug Death XL**  
                         **Doff Super Slug Killer**

**Metaldehyde** Used as pelleted baits or a liquid for watering on to the soil against slugs and snails. Dangerous to pets if eaten, especially cats and dogs. Pellets can be used around ornamental and edible plants but keep them off the foliage and scatter thinly on the soil. The liquid formulation can be applied with a watering can and rose to ornamental plants and the soil, but not near edible plants.

PELLETS            **Slug Clear Ultra Pellets** – marketed by Scotts  
                         **Bio Slug and Snail Killer**  
                         **Doff Slug Killer Blue Mini Pellets**  
                         **Westland Erazo Slug and Snail Killer**

LIQUID            **Slug Clear** – marketed by Scotts

## **BARRIERS, NETTING AND PEST MONITORING TRAPS**

### **INSECT BARRIER NETTING**

Some pests can be excluded from their host plants by covering them with small mesh netting. This is mainly used to protect low-growing plants such as vegetables. Barrier netting needs to be used in conjunction with crop rotation, otherwise adult pests may emerge underneath the netting from pupae that have overwintered in the soil.

**Agralan Enviromesh standard** will exclude pests such as carrot fly, cabbage root fly, onion fly, butterflies and larger moths.

**Agralan Enviromesh fine mesh** and **Haxnicks Eco Green Micromesh** exclude the above and also smaller pests, such as flea beetle, leek moth, whitefly, aphids and leafminers.

**Agralan Butterfly and Bird Protection** netting excludes cabbage moth and butterflies.

All of the above give protection against pigeons and rabbits.

### **STICKY TRAPS**

**Greasebands** These are applied to the trunks and stakes of fruit and ornamental trees to prevent wingless females of winter moths and similar species reaching the branches where they lay their eggs. Bands must be in position and kept sticky between November to March. 'Barrier Glue' can also be used around pots and greenhouse staging to deter vine weevils.

**Bayer Boltac Greasebands**  
**Vitax Fruit Tree Grease**  
**Agralan Insect Barrier Glue**  
**Agralan Glue Bands**  
**Growing Success Glue Band Traps**  
**Vitax Tree Bands**

**Yellow sticky traps** Yellow plastic sheets coated with a non-drying glue used in greenhouses to trap winged insects. They may help check pests such as whitefly, thrips, leafhoppers, fungus gnats and leaf miners but are unlikely to give complete control as the immature stages are not trapped. The traps are

more effective if plants are shaken at least once a day to encourage pests to fly.

**STICKY TRAPS**

- Agralan Yellow Sticky Traps**
- Agralan Mini Yellow Sticky Traps**
- Bayer Greenhouse Fly Catcher**
- Growing Success Greenhouse Whitefly Traps**
- Vitax Whitefly Traps**

**Pheromone moth traps** Sticky traps combined with a non-toxic chemical attractant (pheromone) for use against certain specific pests. These traps attract males only but may capture enough to reduce the females' mating success and so reduce the amount of pest damage. Pheromone traps' main use is to time sprays against the newly hatched larvae more accurately. The traps marketed by Agralan are designed to exclude birds.

**TRAPS**

- Agralan Codling Moth Trap**
- Agralan Leek Moth Trap**
- Agralan Pea Moth Trap**
- Agralan Plum Moth Trap**
- Agralan Raspberry Beetle Trap**
- Agralan Tortrix Moth Trap** (for carnation tortrix or light brown apple moth)
- Growing Success Plum Maggot Monitoring Trap**
- Growing Success Apple Maggot Monitoring Trap**
- Vitax Apple Maggot Monitoring Trap**
- Vitax Plum Maggot Monitoring Trap**

## PESTICIDE COMPANIES

Scotts products are marketed by The Scotts Company, (UK) Ltd, Salisbury House, Weyside Park, Catteshall Lane, Godalming, Surrey, GU7 1XE [[www.lovethegarden.com](http://www.lovethegarden.com)]

Bayer, Bio, Baby Bio and Provado products are marketed by Bayer Garden, 230 Cambridge Science Park, Milton Road, Cambridge, CB4 0WB [[www.bayergarden.co.uk](http://www.bayergarden.co.uk)]

Vitax, Py and Nippon products are marketed by Vitax Ltd, Owen Street, Coalville, Leics, LE67 3DE [[www.vitax.co.uk](http://www.vitax.co.uk)]

Doff products are marketed by Doff Portland Ltd, Aerial Way, Watnall Road, Hucknall, Nottingham, NG15 6DW [[www.doff.co.uk](http://www.doff.co.uk)]

Agralan products are marketed by Agralan Ltd, The Old Brickyard, Ashton Keynes, Swindon, Wilts, SN6 6QR [[www.agralan.co.uk](http://www.agralan.co.uk)]

Growing Success and Deadfast products are marketed by William Sinclair Horticulture Ltd, Firth Road, Lincoln, LN6 7AH [[www.william-sinclair.co.uk](http://www.william-sinclair.co.uk)]

Westland products are marketed by Westland Horticulture, 14 Granville Industrial Estate, Dungannon, BT70 1NJ [[www.gardenhealth.com](http://www.gardenhealth.com)]

SB Plant Invigorator is marketed by Stan Brouard Ltd, PO Box 383, Landes du Marche, Vale, Guernsey, GY1 3FE [[www.sbproducts.co.uk](http://www.sbproducts.co.uk)].

Rentokil products are marketed by Rentokil Ltd, Garland Court, Garland Road, East Grinstead, RH19 1DY [[www.rentokil.co.uk](http://www.rentokil.co.uk)]

Fumite products are marketed by Proctor Bros Ltd, 11 Pantglas Industrial Estate, Bedwas, Caerphilly, CF83 8XD [[www.pest-stop.co.uk](http://www.pest-stop.co.uk)]

Dethlac is marketed by Gerhardt Pharmaceuticals Ltd, PO Box 777, London SW19 5DY

[www.dethlac.com](http://www.dethlac.com)

For an alternative format of this leaflet please call 0845 062 1111, or textphone 18001 0845 260 5000 or email [membership@rhs.org.uk](mailto:membership@rhs.org.uk)



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