

The Royal Horticultural Society

Entomology Advisory Leaflet

February 2010



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 www.pesticides.gov.uk/garden.asp. For products with HSE numbers, see 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 in the vicinity 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 as well as the upper surface of the leaves.
- Make up only sufficient diluted pesticide for the task. Left-over spray and other garden chemicals must not be poured down the drain.
- 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.
- 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. All 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 must also be emphasised that the RHS is not liable in any way for any consequences that may ensue from the use of pesticides by amateur gardeners.

The lists of pests controlled given under the name of the active ingredient are for guidance only. The instructions on the product should 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. Brands with the same active ingredient may vary in the range of pests controlled and the plants on which they can be used.

Further details about many of the products listed in this leaflet can be obtained from the Crop Protection Association's website (www.garden-care.org.uk). Information on pesticide approvals and safe use can be obtained from www.pesticides.gov.uk/garden.asp.

NATURAL (ORGANIC) INSECTICIDES

These products are derived from plants or other natural substances. They are contact in action and therefore require thorough application, especially on the undersides of leaves. They control a broad range of invertebrate animals, including some beneficial ones if present on the plants at the time of treatment. The short persistence of these compounds may mean that more frequent applications are needed than for synthetic pesticides. They are safe to use on most plants, including listed fruits and vegetables which can be treated close to harvesting (see label recommendations). Relatively harmless to birds and mammals but harmful to fish and amphibians.

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.

SPRAYS **Py Spray Garden Insect Killer Concentrate**
 #Py Insect Killer Spray
 #Doff All in One Bug Spray
 #Bug Clear Gun for Fruit & Veg - marketed by Scotts
 #Vitax House Plant Pest Killer
 #Westland Earth Matters Natural Pest Control

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

Fatty acids (Insecticidal soaps) A mixture of fatty acids derived from plant and animal oils. For use against aphids, whitefly, thrips, mealybugs, scale insects, leafhoppers and red spider mite.

SPRAYS **#Bayer Organic Pest Control**
 #Bayer Organic Pest Free
 #Doff Indoor Plants 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

Plant oils Refined plant oils, such as those derived from rape seed and sunflower, which block the breathing pores of small insects and mites, such as aphids, whitefly, thrips, scale insects and red spider mites. Bees and ladybirds are unharmed. No harvest interval required but do not use on fuchsia or begonia. Some products based on plant oils are for controlling ants and other crawling insects. Also available for use against overwintering aphid eggs on dormant deciduous fruit trees and bushes. The Vitax products also contain fish oils. Note that myclobutanil (Bayer Multirose 3) is not a natural (organic) chemical.

SPRAYS **Growing Success Winter Tree Wash**
 Vitax Winter Tree Wash
 Vitax Organic 2 in 1 Pest & Disease Control Concentrate
 Bug Clear for Fruit & Veg – marketed by Scotts
 #Vitax Organic 2 in 1 Pest & Disease Control
 #Growing Success Ant Killer
 #Bayer Multirose 3 (with myclobutanil*)

Plant extracts A mixture of long chain polymers and surfactants, that blocks the breathing pores of small insects and mites, such as aphids, thrips, whitefly and red spider mites, and prevents their movement.

SPRAYS **#Growing Success Greenhouse Whitefly Killer**
 #Agralan Whitefly Killer
 #Growing Success Fruit & Veg Bug Killer
 #Growing Success Shrub & Flower Bug Killer

Sulphur A naturally occurring mineral available as a general glasshouse fumigant. 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
 Ant Stop! Powder - marketed by Scotts
 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; bifenthrin also controls red spider mites. By making alterations to the molecular structure of natural pyrethrum, synthetic pyrethroid compounds, such as **cypermethrin**, **resmethrin**, **bioallethrin**, **phenothrin**, **lambda cyhalothrin**, **deltamethrin**, **bifenthrin**, **tetramethrin** and

permethrin, have been developed. Permethrin, lambda cyhalothrin, deltamethrin, bifenthrin 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.

Bifenthrin Note that this insecticide will not be sold after 31.5.10. Existing stocks should be used up or disposed of safely by 31.5.11. For use on ornamental plants and listed fruits and vegetables. Controls aphids, whitefly, thrips, red spider mite, codling moth and caterpillars.

SPRAYS

Doff All-In-One Garden Pest Killer
Bayer Sprayday Greenfly Killer Plus
Bayer Multirose 3 in 1 concentrate (+ myclobutanil* + foliar feed)
Rose Clear 3 (+ myclobutanil*) - marketed by Scotts
#Rose Clear 3 Gun! (+ myclobutanil*) - marketed by Scotts
#Bayer Bug-Free
#Bug Clear Gun! - marketed by Scotts
#Bayer Multirose 3 in 1 (+ myclobutanil* + foliar feed)
#Bayer Bug and Disease Killer (+ myclobutanil*)

Deltamethrin A spray concentrate 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 Sprayday Greenfly Killer
#Ant Stop! Gun – marketed by Scotts

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 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.

#Vitax Nippon Ant & Crawling Insect Killer Spray
#Westland Ant Attack
#Doff Ant & Crawling Insect Killer Spray
#Deadfast Ant & Crawling Insect Killer

Permethrin Dusts for controlling woodlice, ants and other crawling insects in and around buildings. A smoke formulation for insect pests in roof spaces, garages and garden sheds (not greenhouses).

DUSTS

Vitax Nippon Ant Killer Powder
Vitax Nippon Woodlice Killer
Doff Ant Killer
Deadfast Ant Killer Powder

SMOKE

Deadfast Garage and Loft Smoke Fumigator
Fumite Insect Killer

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 Ant Killer (permethrin + pyrethrum)
Vitax Nippon Ant and Crawling Insect Killer (permethrin + tetramethrin)
Doff Foaming Wasp Nest Destroyer (permethrin + tetramethrin)

GEL BAIT **Rentokil Ant Killer Gel** (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 or 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 ready to use formulation 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.

SPRAY **Bug Clear Ultra** (concentrate) – marketed by Scotts
Rose Clear for Bugs – marketed by Scotts
#Bug Clear Ultra Gun – 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 some 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 abemectin. This combined pesticide additionally controls red spider mite on container-grown house plants and in glasshouses. Fertiliser sticks containing thiamethoxam can be inserted into the compost of ornamental pot plants.

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 and cyclamen moth)
Growing Success Plum Maggot Monitoring Trap
Growing Success Apple Maggot Monitoring Trap
Vitax Apple Maggot
Vitax Plum Maggot

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]

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]

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

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

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

Growing Success, Deadfast and Dethlac products are marketed by Monro Brands, Unit I, St Martins Courtyard, Chapel Lane, Zeals, Wilts, BA12 6NZ [www.monrobrands.com]

Westland products are marketed by Westland Horticulture, 14 Granville Industrial Estate, Dungannon, BT70 1NJ [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].

Rentokil products are marketed by Rentokil Ltd, Garland Court, Garland Road, East Grinstead, RH19 1DY [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]

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



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