

Pesticides for Home Gardeners

RHS Gardening Advice
February 2018



Sharing the best in Gardening

Inclusion of a pesticide product in this leaflet does not indicate a recommendation or endorsement by the RHS. This is a list of products available to the home gardener.

The RHS statement on pesticides in horticulture and how gardeners can help bees and other pollinators by avoiding the use of neonicotinoids and other pesticides can be found at www.rhs.org.uk/pesticide-statement

Introduction

UK and European Union (EU) legislation requires approval at EU level for active ingredients used in all pesticides, including those for home garden use. Member states then approve products containing allowed ingredients. Products approved in the UK are assigned a registration number, printed on the packaging – MAPP numbers for pesticides for use on plants and HSE numbers for household products. Products with currently listed numbers are approved and considered safe if used in accordance with the manufacturer's instructions. To check MAPP numbers, see <https://secure.pesticides.gov.uk/garden/prodse/arch.asp> and for HSE numbers, see www.hse.gov.uk/biocides/copr/approved.htm




Technically the definition of pesticides also includes fungicides and weedkillers, this leaflet only covers pesticides that control animals (primary insect and mite) that affect garden and house plants. Information on weedkillers and fungicides are available as separate leaflets. Some products listed in this leaflet, for example pheromones and plant extracts which act by physical means, are not considered pesticides and do not always require registration.

To minimise any possible harmful effects arising from pesticide use the following rules should be observed:

- **Avoid the use of pesticides, use them only when really necessary.** Some pests can be kept under control by cultivation techniques such as rotation of crops or hand removal of pests. Using biological controls

and encouraging natural enemies can also reduce or eliminate the need for spraying. Tolerating some damage will also reduce the need for pesticides

- **Do not spray open blooms because of the danger to bees, butterflies and other flower visitors (pollinators).**
- Identify the pest correctly in order to apply appropriate control measures.
- Select a pesticide that is recommended for the purpose; always read the label before choosing a product. Do not purchase large amounts of pesticide that will take many years to use up. If only a few plants require treatment, a ready-to-use formulation is likely to be the most appropriate.
- Read the manufacturer's instructions and check for any limitations or specific precautions you should take. As an added safety measure you could wear rubber gloves when applying pesticide and whilst handling concentrates.
- Avoid contact with exposed parts of the body, particularly the eyes and mouth. Wash off any splashes immediately.
- Avoid breathing in sprays by standing up-wind while treating.
- Wash after using pesticides.
- Do not smoke, eat or drink while applying pesticides.
- Make sure no children or pets are nearby when spraying and keep them away until the foliage is dry.
- Follow all the manufacturer's instructions and apply the pesticide at the stated rate and in the manner described. It is a legal requirement to comply with the Statutory Conditions on the label and packaging.

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- Spray at the correct times and intervals as this is often crucial for the control of a pest.
- 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(s) and harvest (harvest interval) and the maximum number of applications permitted per growing season.
- It is illegal to mix two pesticides together to give a combined spray unless the manufacturer indicates that this is permissible. Some products are sold as combined insecticide/fungicide for use on ornamental plants.
- Spray plants thoroughly, including stems, buds and the underside of leaves but without excessive run-off or drift.
- Do not spray plants that may be damaged by pesticides 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.
- To avoid drift and potential plant damage do not use pesticides in wet, windy, completely calm or hot sunny weather, or when plants are suffering from drought. Spray in the early morning, late afternoon or evening.
- All pesticides pose a risk to fish, amphibians and other pond life. Keep pesticides, away from ponds, ditches, streams and other water bodies.
- Clean all equipment after spraying. Do not apply pesticides with apparatus that has been used for weedkillers.
- Store pesticides in a cool, safe place away from children and pets, keeping them tightly closed and in their original containers.
- 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.gardenchemicaldisposal.co.uk

Choosing pesticides available to home gardeners




This leaflet is not a complete list pesticides available to home gardeners for controlling plant pests but it includes most widely available products. Some active ingredients listed in this leaflet under manufacturers' brand names may be available from some outlets as "own brand" products. It is not practicable to list these. Check the label of the pesticide carefully to confirm the active ingredient.

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 chemical names of their active ingredients. Manufacturers of pesticides subject to regulations made under UK and EU legislation are obliged by law to print the name of the active ingredient on the label but this may be in small print. Please note that inclusion in this leaflet does not indicate a recommendation or endorsement by the RHS. It is emphasised that the RHS is not liable in any way for any consequences that may ensue from the use of these products.

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 edibles) 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.

Products for control of mammal pests such as mice and rats are not included on this leaflet. Products for controlling pests which do not directly affect plants are also not included.

Further details about most of the products listed can be obtained from The Common Sense Gardening Group of the Crop Protection Association (www.garden-care.org.uk/about) . Further information on pesticide approvals and safe use can be obtained from www.pesticides.gov.uk/garden_home.asp.

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Products available to home gardeners

Key

* These active ingredients are fungicides. Detail are given in [Fungicides for Home Gardeners](#)

RTU Ready to use sprays

1. Natural (organic) insecticides

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

a) Natural pyrethrum/pyrethrins

Derived from the flowers of *Tanacetum cinerariifolium*. Broad spectrum insecticide, that can control a wide range of insects including whitefly, small caterpillars, aphids, thrips, leafhoppers, capsids, ants and some beetle pests.

Sprays	Bug Clear Gun for Fruit & Veg RTU Defenders Bug Killer RTU Ecofective Bug Killer RTU , also contains fatty acids Vitax House Plant Pest Killer RTU Pyrol Bug & Larvae Killer RTU and concentrate Pyrol Bug & Larvae Killer for Roses RTU
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Dusts & Granules	Py Insect Killer Powder
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b) Fatty acids (insecticidal soaps)

For use against aphids, whitefly, thrips, mealybugs, scale insects, leafhoppers and red spider mite.

Sprays	Solabiol Bug Free RTU Doff Greenfly and blackfly bug Killer RTU Doff Universal Bug Killer RTU
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c) Plant oils and extracts




Refined plant oils, such as those derived from rape seed and sunflower, which block the breathing pores (spiracles) of small insects and mites, including aphids, whitefly, thrips, mealybugs, scale insects and red spider mites. Bees and ladybirds are less likely to be harmed. No harvest interval required but do not use on fuchsia or begonia. Also available as winter wash for use against overwintering aphid eggs on dormant deciduous fruit trees and bushes.

Sprays	Growing Success Winter Tree Wash Vitax Organic Pest & Disease Control Concentrate (also contains fish oils) Origins Bug Control BugClear Fruit and veg Vitax Organic Pest & Disease Control RTU (also contains fish oils)
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d) Garlic extract

Products based on garlic available as a fumigant for dispersing insect pests in glasshouses

Fumigant	Pest-Stop Biofume Greenhouse Fumigator
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e) Seaweed extract

Products based on seaweed with a physical action for control of glasshouse whitefly

Spray **Agralan Whitefly Killer**

2. Compounds with a physical mode of action (not-organic)

Plant invigorators

Consisting of blends of surfactants and nutrients or fatty acids and algae extracts, plant invigorators aid the optimal nutrition of plants and can help control pests including whitefly, aphids, mealybugs and red spider mite as well as some plant diseases. Healthy plants are more resistant to pests and diseases and the invigorators can give some control by a sticking and a washing process.

Spray **Ecofective House Plant Defender 3 in 1 RTU**
Ecofective Rose Defender 3 in 1 RTU and concentrate
Neudorff Plant Invigorator RTU
Neudorff Rose Vitaliser RTU
SB Plant Invigorator RTU and concentrate
Westland Resolva Natural Power Bug & Mildew

3. Synthetic insecticides: contact action

Synthetic pyrethroids

Contact and broad spectrum, effective against a wide range of insects including aphids, whiteflies, leafhoppers, thrips, beetles, ants and small caterpillars. By making alterations to the molecular structure of natural pyrethrum, synthetic photostable pyrethroid compounds, such as **cypermethrin**, **phenothrin**, **lambda-cyhalothrin**, **deltamethrin**, **tetramethrin** and **permethrin**, were developed. These synthetic pyrethroids retained the low mammalian toxicity of other pyrethroids but can remain active against some pests for several weeks. Other pyrethroids break down quickly in sunlight losing their activity within days. Some products can be used on listed food plants.

a) Deltamethrin




A spray concentrate and ready to use for controlling aphids, whitefly, caterpillars, codling moth, plum moth, tortrix moths, raspberry beetle, flea beetles, weevils, sawfly larvae, apple and pear suckers, leafhoppers, capsid bugs, scale insects and mealybugs on ornamental plants and a wide range of listed edibles. One formulation contains a fungicide (tebuconazole) that is effective against rose rust, blackspot and powdery mildew that can be used on ornamental plants.

Sprays **Baby Bio Houseplant Bug Killer RTU**
Provado Ultimate Bug Killer RTU and concentrate
Bayer Multirose Concentrate 2 (+ tebuconazole*)
Provado Ultimate Fruit & Vegetable Bug Killer RTU and concentrate
Sprayday Greenfly Killer
Toprose Bug Killer RTU

b) Lambda-cyhalothrin

A 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 and some other pests. Can be used on ornamental plants and a wide range of listed fruits and vegetables.

Sprays **Westland Resolva Bug Killer RTU and concentrate**

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c) Cypermethrin

Available as a ready to use spray and concentrate for application to a wide range of ornamental and edible plants. There is also a ready to use spray for aphid control with a fungicide that is effective against rose rust, blackspot and powdery mildew that can be used on ornamental plants.

Sprays	Py Bug Killer RTU and concentrate Doff Rose Shield Bug & Fungus Killer RTU (+ myclobutanil*) Vitax Rosegarde RTU (+ myclobutanil*)
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d) Permethrin.

Smoke formulations for use against aphids, whitefly and other insects in greenhouses.

Smoke	Deadfast Greenhouse Smoke Generator DeadFast Greenhouse Smoke Fumigator Vitax Greenhouse Fumigator
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4. Synthetic insecticides: systemic action

Systemic insecticides are absorbed into plants through the roots and/or foliage, they usually also have contact action. Specified pests are killed when they feed on the treated roots and/or foliage. The two active ingredients in this section are neonicotinoid pesticides.

Withdrawal of imidacloprid and thiamethoxam




Two neonicotinoid pesticides that were available to the home gardener (imidacloprid and thiamethoxam) were withdrawn in 2013. Following concern over their effects on bees the European Commission restricted their use whilst further evidence was gathered and evaluated. The withdrawal (in effect a ban) came into force on 30 September 2013. In April 2018 the withdrawal was made permanent and extended to include plants that are either not pollinated by bees such as cereal crops, which are wind pollinated, or ones that are harvested before they flower such as sugar beet in outside spaces. This withdrawal of approval will become effective before the end of 2018. Imidacloprid and thiamethoxam may still be used by professional growers on plants grown in a fully enclosed greenhouse environment with stringent conditions that prohibit treated plants being put outside until they have finished flowering, nor planted in the soil until nine months have elapsed after growing medium treatment. Two other neonicotinoids, both considered of lower bee toxicity, remain available to professional growers; acetamiprid and thiacloprid. Only acetamiprid is available to home gardeners. It is illegal to use unapproved products and these should be taken to a local authority household waste site where they should be handed over to the staff.

For information on waste disposal sites see gardenchemicaldisposal.co.uk. It remains legal to use other neonicotinoid-based products that are not affected by the withdrawal, listed below.

a) Acetamiprid

A broad spectrum, systemic and contact action pesticide for use as a foliar spray on ornamental plants. Some formulations can be used on tomato, aubergine, pepper, potato, lettuce, apple, pear, cherry and plum. Also as a compost drench on container grown ornamental plants, primarily against vine weevil grubs. This pesticide also controls aphids, whitefly, scale insects, mealybugs and thrips. The spray formulations can also be used against red spider mite, lily beetle and caterpillars. Sprays containing the fungicide triticonazole also control mildew, rust and blackspot on roses.

Sprays	Bug Clear Ultra concentrate – marketed by Scotts Rose Clear Ultra concentrate (+ triticonazole*) – marketed by Scotts Bug Clear Ultra Gun RTU Rose Clear Ultra Gun RTU (+ triticonazole*)
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b) Thiacloprid

A systemic insecticide that has been withdrawn from sale for commercial reasons, products including **Bayer Provado Vine Weevil Killer 2, Bayer Provado Ultimate Bug Killer 2, Bayer Provado Ultimate Bug Killer Ready to Use, Baby Bio House Plant Insecticide** can continue to be used until 17/08/2018.

5. Slug control chemicals

In addition to the chemicals listed below for controlling slugs and snails, there are many products available that deter or act as a barrier to these pests. Further details of these products are given in the advisory information on "Slugs and Snails" <https://www.rhs.org.uk/advice/profile?PID=228>

a) Ferric (iron) 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	Solabiol Garden Slug Killer Doff Super Slug Killer Growing Success Slug Killer Advanced Origins Slug Control SlugClear Ultra³ Sluggo Slug & Snail Killer Sluggo Slug & Snail Killer Ultra Vitax Slug Rid
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b) Metaldehyde

Used as pelleted baits or a liquid for watering on to the soil against slugs and snails. Toxic 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	Ultimate Slug & Snail Killer – Marketed by SBM Life Science Deadfast Slug Killer Doff Slug Killer Blue Mini Pellets Westland Eraza Slug and Snail Killer
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Liquid	Slug Clear
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6. Barriers, netting and pest monitoring traps**a) 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. Some examples of branded netting are given below. Additional information on insect-proof mesh can be found at www.rhs.org.uk/advice/profile?PID=923.

Agralan Enviromesh, Enviromesh UAP, Tendamesh and Haxnicks Micromesh




Will exclude pests including; carrot fly, cabbage root fly, onion fly, butterflies, moths, flea beetle, leek moth, whitefly, aphids, spotted winged drosophila and leafminers. Tendamesh is lighter and softer than some other meshes and suitable for use on delicate vegetables such as baby leaf salads.

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Agralan Butterfly and Bird Protection

Netting that excludes cabbage moth butterflies and birds

All of the above give protection against pigeons and rabbits.

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b) Greasebands and barrier glues

These are applied to the trunks and stakes of fruit and ornamental trees to these are primarily 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 and March. Some barriers advertise that they will control other problems such as ants. 'Barrier Glue' can also be used around pots and greenhouse staging to deter vine weevils.

Greasebands & glue barriers	Agralan Glue Bands Agralan Insect Barrier Glue Defenders Fruit Tree Grease Band Doff Tree Grease Band Solabiol Boltac Greasebands Growing Success Glue Band Traps Neudorff Greaseband Vitax Fruit Tree Grease Vitax Tree Bands
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c) Sticky traps

Plastic sheets coated with non-drying glue used in greenhouses to trap winged insects. They will help monitor 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. Yellow traps are more likely to trap whitefly and blue thrips.

Sticky traps	Agralan Mini Yellow Sticky Traps Agralan Yellow Sticky Traps Defenders greenhouse insect catcher Growing Success Greenhouse Whitefly Traps Neudorff Plant Flycatchers Vitax Whitefly Traps
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d) Pheromone and Kairomone traps

Sticky or water traps combined with a chemical attractant (pheromone or kairomone) for use against certain specific pests. Pheromone traps contain the odour of unmated females and attract only males, but may capture enough to reduce the females' mating success thus reducing the amount of pest damage.

Pheromone traps' main use is to help to indicate when sprays can be applied at the most effective time. Kairomone traps elicit the odour of the host plant and trap both males and females. In addition to the below Agralan can supply pheromone traps for a wide range of other pests, contact the company for further details.

Pheromones	Agralan Box Tree Moth Trap Agralan Codling Moth Trap Agralan Leek Moth Trap Agralan light brown apple moth trap Agralan Plum Moth Trap Bayer BUXatrap Box Tree Moth Trap Growing Success Apple Maggot Monitoring Trap Growing Success Plum Maggot Monitoring Trap Vitax Apple Maggot Monitoring Trap Vitax Plum Maggot Monitoring Trap
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Kairomones	Agralan Raspberry Beetle Trap Agralan spotted winged drosophila trap
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ALWAYS READ THE LABEL USE PESTICIDES SAFELY

Pesticide and plant protection product companies

Agralan products are marketed by Agralan Ltd, The Old Brickyard, Ashton Keynes, Swindon, Wiltshire SN6 6QR. www.agralan.co.uk Email sales@agralan.co.uk Tel: (01285) 860015

Bayer, Bio, Baby Bio, Provado, Toprose and Solabiol products are marketed by SBM Life Science Ltd, Unit 2, Techno Park, Newmarket Road, Cambridge CB5 8PB. www.solabiol.co.uk and www.protect-garden.co.uk Tel: 0845 3454100

Defenders, products are marketed by STV International Ltd, Forge House, Little Cressingham, Thetford IP25 6ND. www.stvpestcontrol.com Email info@stvpestcontrol.com

Doff products are marketed by Doff Portland Ltd, Aerial Way, Watnall Road, Hucknall, Nottingham NG15 6DW. www.doff.co.uk Tel: 0115 983 4300

Ecofective products are marketed by ecofective, 4 Archway House, The Lanterns, Melbourn Strett, Royston, Hertfordshire SG8 7BX. www.ecofective.uk.com

Haxnicks Products are marketed by Tildenet Group Ltd, Journal House, Hartcliffe Way, Bristol BS3 5RJ. www.haxnicks.co.uk Tel: 0117 934 1799




SB Plant Invigorator is marketed by Stan Brouard Ltd, PO Box 383, Landes du Marche, Vale, Guernsey GY1 3FE. www.sbproducts.co.uk Email info@sbproducts.co.uk

Scotts, Bug Clear and Origins products are marketed by The Scotts Miracle-Gro Company, 1 Archipelago, Lyon Way, Frimley, Surrey GU16 7ER. www.lovethegarden.com Tel: 01276 401300

Sluggo, Neudorff and Pyrol products are marketed by Neudorff, Neudorff UK Limited, Vienna House, Birmingham International Park, Solihull B37 7GN. www.neudorff.co.uk Tel: 0121 767 1821

Westland, Growing Success and Deadfast products are marketed by Westland Horticulture, Customer Services, Westland Horticulture Ltd, Alconbury Hill, Huntingdon, Cambridgeshire PE28 4HY. www.gardenhealth.com Tel: 0288 772 7500

Vitax, Py and Nippon products are marketed by Vitax Ltd, Owen Street, Coalville, Leicestershire LE67 3DE. www.vitax.co.uk Email info@vitax.co.uk Tel: 01530 510060

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