

## Supreme versatility

Roundup ProBiactive 450 is approved for weed control in a very wide variety of applications, including amenity, industrial, forestry and aquatic areas.

### 450 Paths, roads, drains

The herbicide may be used in and around drainage channels. It does not creep or move in the soil to affect untreated areas such as grass verges. Roundup ProBiactive 450 will not affect plants, trees or shrubs through their roots and can be used right up to trees or hedge bottoms, provided that care is taken to avoid spray drifting on to the leaves or soft stems of plants. There is no penetration of mature bark.

### 450 Before planting or sowing

Roundup ProBiactive 450 can be safely used to remove unwanted vegetation before planting shrubs, ornamentals, vegetables or other species, or seeding grass. The herbicidal effect is lost on contact with the soil, contact with the soil, so there is no residual activity to affect subsequent plantings. Planting of all species may take place 7 days after application, and grass seed can be sown 15 days after application.

### 450 Around young trees

Maintaining a weed-free area at the base of young trees removes competition and allows water and nutrients to be fully utilised. Roundup ProBiactive 450 is the ideal herbicide as it offers excellent broad-spectrum weed control and no harmful residues remain in the soil to check tree growth. The preferred time to control weeds is pre-planting, as difficult weeds are more easily controlled when spraying is not restricted by the presence of young trees.

### 450 Woodland management

The use of Roundup ProBiactive 450 can aid scrub clearance and prevent the re-growth that soon occurs after cutting back by mechanical means only. It may also be used for stump treatment, killing the root system to avoid regrowth or coppicing of crop trees after felling.

### 450 Aquatic weeds

Environmental safety is a key consideration when treating weeds in and around water. Roundup ProBiactive 450 is especially suitable for these areas, giving effective weed control whilst breaking down in soil or sediment into harmless natural substances. It is non-residual and does not harm animals, birds, fish, insects and other wildlife.

### 450 Difficult weeds

Some weeds are reputed to be difficult to control because they have extensive root systems such as Japanese Knotweed, Bracken or very waxy leaves like Rhododendron. The unique surfactant system of Roundup ProBiactive 450 enhances leaf penetration and translocation, ensuring effective performance against almost every weed. Correct application at the recommended dose provides control of Bracken, Common Nettle, Common Ragwort, Dandelion, Giant Hogweed, Ground Elder, Himalayan Balsam, Horsetail, Japanese Knotweed and Rhododendron.

### 450 Long term weed control

If long term weed control is required from a single application, Roundup ProBiactive 450 may be tank mixed with diuron. This tank mixture is ideal for use on pavement backs, footpaths, fence lines, gravelled areas, waste ground and around buildings. It prevents subsequent germination of many weeds, including Annual Meadow-grass, Fat Hen, Mayweeds and Willow Herb.



## NEW Roundup ProBiactive 450 packs more weed control power into every can

Responding to the amenity market's pressing need for maximum weed control efficacy, economy and ease-of-use, Monsanto presents new high-load Roundup ProBiactive 450.

This standard-setting herbicide delivers all the performance benefits that have made Roundup ProBiactive the choice of professionals across the UK. In addition, the new product contains 25% more glyphosate by volume than its predecessor. As a result, each can of Roundup ProBiactive 450 will treat a significantly greater area, ensuring outstanding economy and reducing storage and handling demands.

### Unique adjuvant technology for unrivalled performance

Roundup ProBiactive 450 is a complete product incorporating a performance enhancing surfactant system, which improves retention, uptake and translocation over traditional glyphosate formulations. More glyphosate reaches the weeds' growing points, ensuring superior weed control. Reliability is increased over a wide range of applications and in difficult or rainy weather conditions. The patented adjuvant formulation of Roundup ProBiactive 450 is found in no other glyphosate-based product. New improved high-load formulation means fewer cans simply, if it doesn't say Biactive on the can, it isn't Biactive in the can.



### Higher load, greater economy

New high-load Roundup ProBiactive 450 rewrites the economics of weed control. With the improved formulation containing 450 g/l of glyphosate, each can is capable of treating an area up to 25% greater than previously with no loss of performance.

### Fewer cans, easier storage

Roundup ProBiactive 450 saves space as well as money, as fewer cans need to be ordered, stored, handled and disposed of when implementing a weed control programme.



## The safer choice

Roundup ProBiactive 450 fully upholds the commitment of Monsanto to operator safety and environmental care.

**450** The herbicide is not a hazardous substance as defined by COSHH when used in accordance with the label, and does not carry a hazard symbol.

**450** As Roundup ProBiactive 450 is non-hazardous, there is no Occupational Exposure Standard (OES) and no specified need to monitor the health of persons using this herbicide.

**450** Glyphosate, the active ingredient in Roundup ProBiactive 450, controls weeds by blocking the plants' enzyme system. These enzymes are present in most plants but do not occur in humans, animals, birds, fish or insects. Roundup ProBiactive 450 is therefore harmless to everything except green plants.

**450** The herbicide has no residual effect, and biodegrades in soil and water into harmless natural substances. Correctly treated water may even be used for irrigation.

**450** Roundup ProBiactive 450 can be used with confidence in areas open to the public and animals, including areas near water.

**450** People, pets and wildlife need not be kept out of treated areas, provided that care is taken to avoid walking in places where the spray is still wet in case accidental transfer causes damage to desirable vegetation.

With its unrivalled performance, enhanced cost-effectiveness, improved convenience and exceptional safety, new Roundup ProBiactive 450 is the total solution for professional weed control.

MONSANTO  
imagine™



Monsanto UK Ltd.  
The Manis Centre, 45 Hauxton Road, Trumpington, Cambridge CB2 2LQ.

For further information on Roundup ProBiactive 450\* contact the Monsanto Technical Helpline on 01223 849540.  
Email: technical.helpline.uk@monsanto.com. Web: www.monsantoamenity.co.uk

Roundup and Biactive are registered trademarks of Monsanto LLC. Roundup ProBiactive 450\* contains glyphosate.

ALWAYS READ THE LABEL. USE PESTICIDES SAFELY. © Monsanto (UK) Ltd 2006.

NOW  
EVEN  
BETTER!

Roundup®  
ProBiactive™ 450

NEW Roundup®  
ProBiactive™ 450

sets the highest standards

## Why compromise?



**450** Unique patented formulation gets more glyphosate into the plant, ensuring effective control

**450** New higher glyphosate concentration gives greater coverage per can, cutting the cost of weed control programmes

**450** The patented adjuvant formulation of Roundup ProBiactive 450 is found in no other glyphosate-based product. New improved high-load formulation means fewer cans are required, simplifying storage and handling

**450** Superior long-term control of difficult perennial weeds, reducing the need for repeat treatments

**450** Effective in a wide range of applications, including control of aquatic weeds

**450** May be tank mixed with diuron, for long-term weed control from a single application

**450** Excellent rainfastness, enabling more advantage to be taken of weather windows

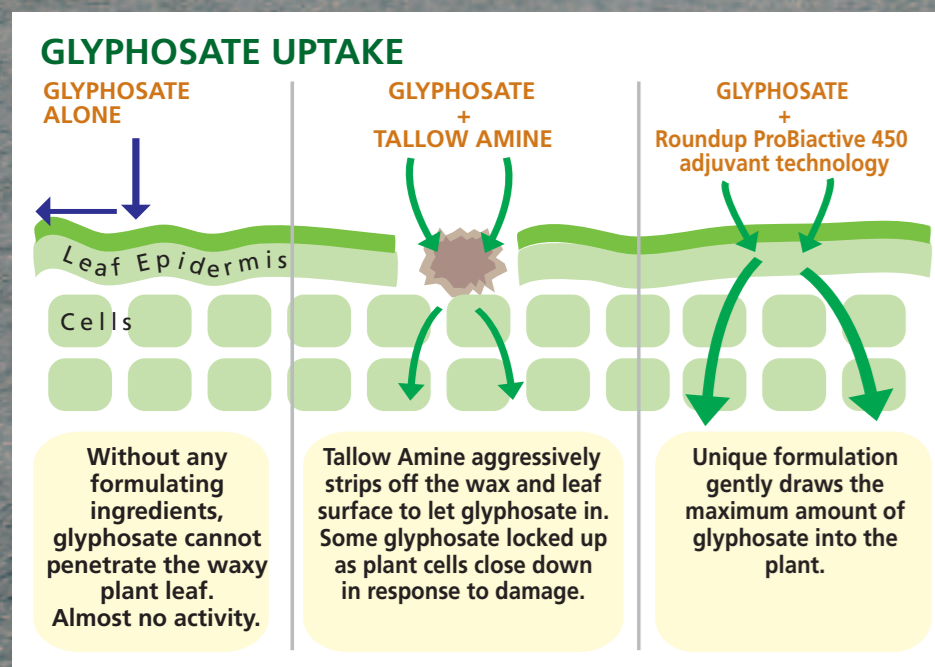
**450** Hazard-free label, confirming its safety for spray operators, the public, wildlife and pets

**450** Biodegrades in soil and water, leaving no residues

The new high-load herbicide for  
cost-effective weed control

**NEW IMPROVED**

# The Roundup Guide to Controlling the top 10 most troublesome weeds



# Roundup<sup>®</sup>






## ProBiactive™ 450





### Why Roundup ProBiactive 450 is more effective

For a herbicide to function, it must break through a leaf's waxy surface and enter the plant cells. This is made possible by the use of an adjuvant or surfactant that breaks down the waxy cuticle. Different glyphosate-based products contain different surfactants of varying efficacy. Conventional Tallow Amine surfactants perform less efficiently than the patented adjuvant technology of Roundup ProBiactive 450.



Technical Helpline: 01223 849540

Weed	Key considerations	Best Control Strategy
 <b>Japanese Knotweed</b> ( <i>Fallopia Japonica</i> )	Highly invasive, particularly problematic near watercourses. Scheduled under the 1981 Wildlife and Countryside Act. Classified as a 'controlled waste' requiring licensed landfill disposal. Grows through walls, tarmac and concrete and can reach 3m high by June. Spreads via rhizomes, does not produce viable seed. Rhizomes from one plant can be 2m deep and 7m wide. Fragments of rhizome of only 1 cm can produce new plants. Repeated cutting will weaken rhizomes but is generally ineffective on its own. Digging can increase spread unless every piece of root is removed.	Roundup ProBiactive 450 is highly effective and safe to use near watercourses. Clear previous year's growth to facilitate spraying. Cut back stems in May/June if already over 1m tall. Spray re-growth at or near flowering in July/August with 4l/ha (20ml/litre of water in a hand-held sprayer) Treated plants take up to 6 weeks to show symptoms. Only remove plant materials when there is no further sprouting. Established stands may take several years to completely control Monitor annually and re-treat fresh growth as necessary.
 <b>Bracken</b> ( <i>Pteridium aquilinum</i> )	Widely distributed throughout the UK, vast stands in upland areas, but also increasingly found on waste ground. Fronds are poisonous to cattle and horses, harbours disease-carrying ticks and carries carcinogenic spores. Thick stands shade out all other plants. Extensive underground network of two rhizome types makes control difficult. Non frond-bearing, storage rhizomes are not killed by some herbicides. Repeated cutting will weaken rhizomes but is generally ineffective on its own.	Roundup ProBiactive 450 gives good control of frond-forming and storage rhizomes when in full leaf. Use a tractor-mounted Weed-wiper for selective control in grassland. Established stands may take several years to completely control. Spray with 4l/ha, (20ml/litre of water in a hand-held sprayer) as fronds approach full size in July/August. Treated fronds will die back within four weeks of treatment. Exclude livestock until foliage has completely died back. Monitor annually and re-treat fresh growth as necessary.
 <b>Horsetail</b> ( <i>Equisetum arvense</i> )	A survivor of the pre-historic age, this fern-like plant spreads mainly by extensive underground rhizomes, up to 2m deep. Foliage shoots emerge in May, precede by spore-bearing shoots in early spring. Prefers moist and shady areas but increasingly found on waste ground and non-cropped areas where it survives most herbicide treatments and takes over in the absence of competition from other weeds. Poisonous to livestock, but avoided by grazing animals - must be excluded from hay/haylage or silage. Thick waxy cuticle and small needle-like leaves make it difficult to get sufficient spray into the plant to kill the roots. Repeated cutting will weaken rhizomes but is generally ineffective on its own.	Wait until vegetative shoots are at full height (60cm), usually July Bruise leaves lightly before spraying to break the wax Use 50ml/litre of water in a hand-held sprayer Or Use a weedwiper with 3 parts water 1 part Roundup ProBiactive 450 to directly apply where weed is too near desirable species for spraying Consider adding extra surfactant, e.g.Mixture B at 2% of the solution to increase penetration. Monitor and retreat site as necessary over a period of 3 years.
 <b>Ivy</b> ( <i>Hedera helix</i> )	A shade loving creeping or climbing evergreen plant which can cause damage to masonry in buildings and walls as well as climbing trees and blocking light. Creeping along the ground it can out-compete many desirable plants in ornamental plantings. The thick, waxy cuticle which covers the leaf makes it difficult to penetrate with foliar herbicides and it is generally considered not to be susceptible to glyphosate. In many areas residuals will not be suitable, especially near water and it may be the only environmentally acceptable choice.	Spray new, soft leaf growth in spring before the wax layer thickens and hardens, from May onwards. Consider adding extra surfactant, e.g.Mixture B at 2% of the solution to increase penetration. Or Use a weedwiper with 3 parts water 1 part Roundup ProBiactive 450 to directly apply where weed is too near desirable species for spraying Where ivy is growing upwards and has a distinguishable trunk it can be cut and the freshly cut stump painted with a 16% solution of Roundup ProBiactive 450 during the dormant season between October and March.
 <b>Rhododendron</b> ( <i>Rhododendron ponticum</i> )	A shade loving invasive plant of woodlands, excluding native species from woodland floors. The sheer physical size of the plant, up to 8m in places, together with a tough waxy leaf make Rhododendron difficult to control. It regenerates quickly if not completely killed.	Paint freshly cut stumps with a 16% solution of Roundup ProBiactive 450 during the dormant season between October and March. Or cut back larger shrubs and treat the 2-3 yr old regeneration with a foliar spray of 8l/ha Roundup ProBiactive 450 Consider adding extra surfactant, e.g.Mixture B at 2% of the solution to increase penetration. Ensure effective coverage of all foliage, but avoid run-off. Spray all sides of the plant. Revisit the site after 2-3 years to control any regrowth or seedlings.

Weed	Key considerations	Best Control Strategy
 <b>Brambles</b> ( <i>Rubus fruticosus</i> )	Scrambling perennial of hedgerows and waste ground, can be very invasive, with spiny stems posing a hazard to people and pets in public areas. Spreads both by rhizomes and stems rooting where they come into contact with the ground. Large stands can be difficult to reach over with a sprayer unless an extending lance is used. Insufficient herbicide will reach the roots and re-growth is more likely when: • Leaf area is small relative to rootstock and sap is rising strongly early in the spring, • As soon as fruits appear the leaf growth becomes less vigorous and prone to disease, spraying once this occurs may limit the long-term effectiveness.	Optimum timing is in the summer, preferably at flowering, when sap flow is downwards to the roots, but before leaves become discoloured. Treating too early in the season is likely to require repeat applications. Spray with 4l/ha, (20ml/litre of water in a hand-held sprayer) Or Use a weedwiper with 3 parts water 1 part Roundup ProBiactive 450 to directly apply where weed is too near desirable species for spraying Monitor site and re-treat as necessary.
 <b>Giant Hogweed</b> ( <i>Heracleum mantegazzianum</i> )	Giant version of common hedgerow and pasture weed, growing up to 5m tall, with flowers up to 0.5 metre and leaves 1 metre across . Serious invasive alien, often found near watercourses. It is an offence under the 1981 Wildlife and Countryside Act to plant or cause it grow in the wild. Poisonous sap causes photo sensitive skin irritation and precludes manual methods of removal. Up to 50,000 seeds per plant viable for 15 years mean it can spread rapidly. Fully mature, flowering plant is too tall to spray except with long lances	Spray plant once it reaches 0.5 m at rosette stage, in spring or spray flowering plants with extending lances in summer. Wear full protective clothing and avoid contact with sap. Spray with 4l/ha, (20ml/litre of water in a hand-held sprayer) Or Use a weedwiper with 3 parts water 1 part Roundup ProBiactive 450 to directly apply where weed is too near desirable species for spraying
 <b>Common Ragwort</b> ( <i>Senecio jacobaea</i> )	Bright Yellow flowers prominent on light land, in neglected pasture and waste ground in summer. Mostly spread by seed blown in the wind from neighbouring land. Poisonous to livestock, especially horses, both fresh and in hay or silage. Spread must be prevented under the Weeds Act 1959 & landowners must adhere to The Ragwort Code of Practice. Cutting can weaken plants, but may turn them from biennials into perennials. Dead foliage must be removed or completely died down before livestock can return to treated areas	Optimum time for spraying is from when the flowering stem has formed, but before seed set. Spray with 4l/ha, (20ml/litre of water in a hand-held sprayer) Or Use a weedwiper with 3 parts water 1 part Roundup ProBiactive 450 to directly apply selectively in pasture.
 <b>Bindweed</b> ( <i>Calystegia spp, convolvulus arvensis</i> )	Climbing perennials widespread over hedges, industrial and amenity areas and waste ground. Spread mainly by long underground rhizomes. Tiny fragments of broken roots will regenerate and spread, so digging can cause rapid multiplication	Optimum timing for established shoots is flowering from June to August. New growth can be treated repeatedly once it reaches 20cm where it is growing amongst desirable species in borders. Spray with 4l/ha, (20ml/litre of water in a hand-held sprayer) Or Use a weedwiper with 3 parts water 1 part Roundup ProBiactive 450 to directly apply where weed is too near desirable species for spraying. Monitor and retreat for up to 3 years
 <b>Ground Elder</b> ( <i>Aegopodium podagraria</i> )	Deep-rooted, perennial invading disturbed ground and amenity areas, particularly prone to infest ornamental plantings. Spread mainly by long underground rhizomes. Digging can cause rapid multiplication, due to the brittle nature of the roots and the rapid regeneration from the tiniest of fragment.	Optimum time to spray is from when the white flowers are showing at the end of May. Earlier treatment will give top growth suppression only, requiring a further treatment of re-growth in autumn. Spray with 4l/ha, (20ml/litre of water in a hand-held sprayer), using a shroud when working in ornamental plantings Or Use a weedwiper with 3 parts water 1 part Roundup ProBiactive 450 to directly apply where weed is too near desirable species for spraying.