



ROUNDUP® ENERGY

A foliar applied translocated herbicide for the control of annual and perennial grass and broad-leaved weeds before sowing or planting of all crops.

For use pre-emergence and pre-harvest in cereals and certain other crops, for destruction of grassland, and use in aquatic areas, stubbles and orchards.

Degraded by micro-organisms/microbes in the soil.

A soluble concentrate containing 450 g/l glyphosate, present as 550g/l (42.2% w/w) of the potassium salt of glyphosate

The (COSHH) Control of Substances Hazardous to Health Regulations may apply to the use of this product at work

Contents **e** 15-20 litres

MAPP Number 12945

PROTECT FROM FROST

Imported

Lot number/production date:

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Not for reformulation or repackaging.
No licence is granted under any patent.



The Voluntary Initiative

*This label has been produced according to the
Crop Protection Association Voluntary Initiative (VI) guidance.*

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telephone National Chemical Emergency Centre: (01865) 407333**



WARNING: Causes serious eye irritation

Wash hands thoroughly after handling. Wear protective eye protection

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: get medical advice/attention.

Do not contaminate water with the product or its container

To avoid risks to human health and the environment, comply with the instructions for use

IMPORTANT INFORMATION

FOR PROFESSIONAL USE ONLY AS AN AGRICULTURAL/HORTICULTURAL/AQUATIC
HERBICIDE

Crops/situations:

Wheat, (including Durum wheat), barley, oats, combining peas, vining peas, field beans;

Oilseed rape, mustard, linseed;

Potatoes; Sugar beet, swedes, turnips, bulb onions, leeks;

All edible crops (stubble), all non-edible crops (stubble);

All edible and non-edible crops (destruction, before sowing/planting);

Grassland;

Apples, pears; plums, cherries, damsons;

Enclosed waters, land immediately adjacent to aquatic areas, open waters.

Green cover on land not being used for crop production;

Maximum individual dose:	}
Maximum number of treatments:	} Full details are given in
Latest time of application:	} the attached leaflet
Other specific restrictions:	} (Crop Specific Information – marked #)

READ THE LABEL BEFORE USE. USING THIS PRODUCT IN A MANNER THAT IS INCONSISTENT WITH THE LABEL MAY BE AN OFFENCE. FOLLOW THE CODE OF PRACTICE FOR USING PLANT PROTECTION PRODUCTS.

SAFETY PRECAUTIONS

Operator protection

Engineering control of operator exposure must be used where reasonably practicable in addition to the following personal protective equipment:

WEAR SUITABLE PROTECTIVE GLOVES when handling the concentrate and when handling contaminated surfaces.

WEAR SUITABLE PROTECTIVE CLOTHING (COVERALLS), SUITABLE PROTECTIVE GLOVES AND RUBBER BOOTS when using hand-held sprayers, hand-held rotary atomisers, weed wiper equipment or spot gun equipment.

However, engineering controls may replace personal protective equipment if a COSHH assessment shows they provide an equal or higher standard of protection.

WASH HANDS AND EXPOSED SKIN before eating and drinking and after work.

Environmental protection

Do not contaminate water with the product or its container except when used as directed. Do not clean application equipment near surface water. Avoid contamination via drains from farmyards and roads.

Recommendations apply to the use of this herbicide for the control of weeds growing in or by water and must be read in conjunction with the Official Code of Practice entitled "Guidelines for the Use of Herbicides on Weeds in or near Watercourses and Lakes" obtainable from Department of Environment and Rural Affairs (DEFRA publications tel: 08459 556000), Scottish Executive, Environment and Rural Affairs Department, Department of Agriculture and Rural Development for Northern Ireland and the National Assembly for Wales Agriculture Department.

The Water Act, 1989, The Water Resources Act 1991, the Control of Pollution Act 1974, The Northern Ireland Water Resources Act 1992 and the Control of Pollution and Local Government (Northern Ireland) Order 1978, may apply to the act of applying MON 79545 for the control of weeds growing in or by reservoirs and water courses, eg rivers, streams, ditches, drains and ponds/lakes discharging into such water courses.

Storage and disposal

KEEP AWAY FROM FOOD, DRINK AND ANIMAL FEEDINGSTUFFS.

KEEP OUT OF REACH OF CHILDREN.

KEEP IN ORIGINAL CONTAINER, tightly closed, in a safe place.

RINSE CONTAINER THOROUGHLY by using an integrated pressure-rinsing device or manually rinse three times. Add washings to sprayer at time of filling and dispose of safely. Triple rinsed containers may be disposed of as non-hazardous waste.

Medical advice

Medical guidance is available on a 24 hour basis by telephoning the National Chemical Emergency Centre on 01865 407333 or for doctors, from the National Poisons Information Service on 0844 8920111.

DIRECTIONS FOR USE

IMPORTANT: This information is approved as part of the Product Label. All instructions within this section must be read carefully in order to obtain safe and successful use of this product.

Warnings

EXTREME CARE SHOULD BE TAKEN TO AVOID SPRAY DRIFT AS THIS CAN SEVERELY DAMAGE NEIGHBOURING CROPS OR PLANTS.

DO NOT MIX, STORE OR APPLY ROUNDUP ENERGY IN GALVANISED OR UNLINED STEEL CONTAINERS OR SPRAY TANKS.

DO NOT leave spray mixtures in tank for long periods and make sure tanks are WELL VENTED.

Restrictions

A period without rain of at least 6 hours, and preferably 24 hours, must follow application of Roundup Energy herbicide.

Do not spray on to weeds suffering from drought, water-logging, heat or frost, otherwise poor control may result.

Do not spray in windy conditions as drift onto desired plants or crops could severely damage or destroy them.

For the pre-crop emergence uses, ensure that spraying precedes ANY crop emergence.

Do not tank mix Roundup Energy with adjuvants, pesticides or fertilisers except as specified under Directions for Use – Compatibility.

Applications of lime, fertiliser, farmyard manure and pesticides should be delayed until 5 days after application of Roundup Energy.

Keep stock out of treated areas for at least 5 days.

TREATED POISONOUS PLANT SPECIES MUST BE REMOVED BEFORE REGRAZING OR CONSERVING. Where Ragwort is present users should consult the Code of Practice on How to Prevent the Spread of Ragwort. Ragwort plants sprayed with this herbicide are more palatable and contain higher levels of toxins. Animals should be excluded from treated areas until any Ragwort has completely recovered or died and there is no visible sign of the dead weed. Do not include treated Ragwort in hay or silage crops.

Weeds controlled

Roundup Energy herbicide controls most emerged grasses and broad-leaved weeds. It is important that all weeds are at the correct growth stage when treated, otherwise some re-growth may occur and this will need re-treatment

Apply Roundup Energy herbicide where there is full emergence of grasses and broad-leaved weeds and they have ACTIVELY GROWING green leaves

- PERENNIAL GRASSES must have full emergence of healthy, green leaf. (Common Couch, for example, becomes susceptible at the onset of tillering and new rhizome

growth, which usually occurs when plants have 4-5 leaves, each with 10-15 cm of new growth).

- PERENNIAL BROAD-LEAVED WEEDS are most susceptible around the flowering stage.
- ANNUAL GRASSES AND BROAD-LEAVED WEEDS should have at least 5 cm of leaf, or 2 expanded true leaves, respectively. In set-aside, annual grasses are best treated at full ear emergence, or before stem elongation. Application during stem extension phase of annual grasses e.g. Black-grass and Brome species on set-aside between the end of April and end of May, may result in poor control and require re-treatment.
- AQUATIC WEEDS should be treated when the weeds are actively growing with full emergence of green leaf, at flowering and before dieback. Best results are obtained from applications in the periods from mid-July to mid-August on Water-lily and mid-August to mid-September on reeds.
- OTHER SPECIES - recommendations for specific areas of use are given in the Recommendation Tables, pages 8-16
- This product will not give an acceptable level of control of Horsetails (*Equisetum arvense*) – repeat treatment will be necessary.

Following crops

Upon soil adsorption the herbicidal properties of Roundup Energy are lost permitting the drilling of crops 48 hrs after application.

Crop Specific Information

Crops or situations:	Maximum individual dose (litres product/ hectare):	Maximum total dose (litres of product/ hectare/crop or situation/ annum):	Latest time of application:
Winter wheat, winter barley, winter oats, spring wheat, spring barley, spring oats, durum wheat, combining pea, field bean	3.2	3.2	7 days before harvest
Post planting and pre-emergence of listed cereals, oilseed rape, combining peas, vining peas, field bean, potatoes, mustard, linseed, sugar beet, swede, turnip, bulb onion and leek	1.2	1.2	Pre-emergence (ensure spraying precedes ANY crop emergence)
Oilseed rape and linseed	3.2	3.2	14 days before harvest
Mustard	3.2	3.2	8 days before harvest.
All edible crops (stubble), all non-edible crops (stubble)	4.0 or 1.2	4.0 3.2	5 days before drilling or planting the following crop or 2 days before the drilling or planting of the following crop or 24 hours before cultivating
All edible and non-edible crops (destruction, before sowing/planting).	4.0	-	-
Grassland	4.8	4.8	5 days before harvest, grazing or drilling
Apple and pear orchards	4.0	4.0	After harvest but before green cluster stage
Cherry, plum and damson orchards	4.0	4.0	After harvest (post leaf fall)but before white bud stage
Green cover on land not being used for crop production	4.8	4.8	24 hours before cultivating
Enclosed waters, land immediately adjacent to aquatic areas, open waters	4.8	-	-
<p>Other Specific Restrictions</p> <p>Users must consult the appropriate water regulatory body (Environment Agency/Scottish Environmental Protection Agency) before using the product near water and must obtain their agreement before using this product to control aquatic weeds. The maximum concentration of active substance in treated water should not exceed 0.04 ppm.</p> <p>When applying through rotary atomisers, the spray droplet spectra produced must be of a minimum Volume Median Diameter (VMD) of 200 microns. Weed wipers may be used in any recommended crop where the wiper or chemical does not touch the growing crop.</p> <p>For weed wiper applications, the maximum concentrations must not exceed the following:</p> <p>(a) Weed wiper mini - 1:2.75 dilution with water (b) Other wipers - 1:1.5 dilution with water</p>			

RECOMMENDATION TABLES

AREA OF USE	TARGET WEEDS/USAGE	CROP	WEED INFESTATION	APPLICATION RATE l/ha	WATER VOLUME	APPLICATION TIMING AND GUIDANCE								
PRE-HARVEST ARABLE CROPS	Common Couch	WINTER and SPRING WHEAT, DURUM WHEAT,	1-25 shoots/m ²	1.6	80-250 l/ha*	<p>Grain/seed moisture must not exceed 30% at spraying.</p> <p>Harvest intervals:</p> <table border="0"> <tr> <td>CEREALS, PEAS, BEANS</td> <td>7+ days</td> </tr> <tr> <td>OILSEED RAPE</td> <td>14-21 days</td> </tr> <tr> <td>LINSEED</td> <td>14-28 days</td> </tr> <tr> <td>MUSTARDS</td> <td>8-10 days</td> </tr> </table> <p>Use high clearance, narrow wheeled tractors, wide booms and crop dividers.</p> <p>DO NOT TREAT CROPS GROWN FOR SEED.</p> <p>Where desiccating crops, check susceptibility of any weeds present.</p> <p>Do not attempt to desiccate OILSEED RAPE or MUSTARD crops with significant secondary growth, uneven maturity, disease or stress.</p> <p>Desiccate LINSEED when seeds are light brown and capsules brown; stems/leaves may be yellow/green.</p> <p>Effects on brewing and baking have not been tested. Consult grain merchant or processor before use.</p> <p>*Rotary atomisers may be used at a water volume of 40 l/ha. Ensure droplet diameter falls within the range 200-300 microns.</p>	CEREALS, PEAS, BEANS	7+ days	OILSEED RAPE	14-21 days	LINSEED	14-28 days	MUSTARDS	8-10 days
		CEREALS, PEAS, BEANS	7+ days											
		OILSEED RAPE	14-21 days											
LINSEED	14-28 days													
MUSTARDS	8-10 days													
WINTER and SPRING BARLEY and WINTER and SPRING OATS	Up to 75 shoots/m ²	2.4												
	Over 75 shoots/m ²	3.2												

AREA OF USE	TARGET WEEDS/USAGE	CROP	WEED INFESTATION	APPLICATION RATE l/ha	WATER VOLUME	APPLICATION TIMING AND GUIDANCE	
PRE-HARVEST ARABLE CROPS (continued)	Common Couch	OILSEED RAPE MUSTARDS	Up to 75 shoots/m ²	2.4	100-250 l/ha#	# Use higher volumes for dense canopies. * Rotary atomisers may be used at a water volume of 40 l/ha. Ensure droplet diameter falls within the range 200-300 microns.	
			Over 75 shoots/m ²	3.2			
		COMBINING PEAS FIELD BEANS	Up to 75 shoots/m ²	2.4	80-250 l/ha*		
			Over 75 shoots/m ²	3.2			
		LINSEED	Up to 75 shoots/m ²	2.4	80-250 l/ha		
			Over 75 shoots/m ²	3.2			
	Perennial broad-leaved weeds and other perennial grasses	WINTER and SPRING WHEAT, DURUM WHEAT, WINTER and SPRING BARLEY and WINTER and SPRING OATS	All levels/species	3.2	80-250 l/ha*		
			OILSEED RAPE MUSTARDS	All levels/species	3.2		200-250 l/ha
			COMBINING PEAS FIELD BEANS	All levels/species	3.2		80-250 l/ha*
			LINSEED	All levels/species	3.2		80-250 l/ha

AREA OF USE	TARGET WEEDS/USAGE	CROP	WEED INFESTATION	APPLICATION RATE l/ha	WATER VOLUME	APPLICATION TIMING AND GUIDANCE
PRE-HARVEST ARABLE CROPS (continued)	Harvest management	WINTER and SPRING WHEAT, DURUM WHEAT, WINTER and SPRING BARLEY and WINTER and	Annual grasses, crop stems and leaves	0.8	80-250 l/ha*	At harvest management rates, ANNUAL NETTLE, VOLUNTEER POTATO, ROSEBAY WILLOW HERB and POLYGONUM WEEDS will not be susceptible. WHEAT crops, WHEAT VOLUNTEERS and BROAD-LEAVED WEEDS may require up to 14 days before harvest. Treated straw must not be used as a horticultural mulch. # Use higher volumes for dense canopies. * Rotary atomisers may be used at a water volume of 40 l/ha. Ensure droplet diameter falls within the range 200-300 microns.
		and SPRING OATS	Annual broad-leaved weeds	1.2		
	Crop desiccation and annual weeds, prior to direct combining	OILSEED RAPE MUSTARDS	All levels/species	2.4	100-250 l/ha#	
		LINSEED	All levels/species	2.4	80-250 l/ha	

AREA OF USE	TARGET WEEDS/ USAGE	CROP/ SITUATION	WEED INFESTATION	APPLICATION RATE l/ha	WATER VOLUME	APPLICATION TIMING AND GUIDANCE
STUBBLES, PRE-SOWING and PRE-PLANTING.	Common Couch	BEFORE ALL CROPS EXCEPT ORCHARDS	Up to 75 shoots/m ²	2.4	80-250 l/ha*	Do not cultivate immediately before spraying. For PERENNIAL weed control, allow: - 21+ days growth before spraying in spring - VOLUNTEER POTATOES to make ample top growth - 5 days before cultivating or drilling For ANNUAL weed control, allow: - 24 hours before cultivating - 48 hours before direct drilling Allow 7 days before planting trees * Rotary atomisers may be used at a water volume of 40 l/ha. Ensure droplet diameter falls within the range 200-300 microns.
	Other perennial grasses; volunteer potatoes (autumn only)		Over 75 shoots/m ²	3.2		
	Perennial broad- leaved weeds		All levels/species	3.2		
	Volunteer cereals and annual weeds		All levels/species	4.0		
	Perennial grasses and broad-leaved weeds	BEFORE ORCHARD PLANTING	Arable weeds Pasture weeds	3.2 4.0		
POST SOWING/ PLANTING, PRE-EMERGENCE OF THE CROP	Volunteer cereals and annual weeds	LISTED CEREALS OILSEED RAPE, POTATOES, MUSTARD, LINSEED, PEAS, FIELD BEANS, SUGAR BEET, SWEDE, TURNIP, ONION & LEEK	All levels/species	1.2	80-250 l/ha*	CAUTION - Ensure that spraying precedes ANY crop emergence. * Rotary atomisers may be used at a water volume of 40 l/ha. Ensure droplet diameter falls within the range 200-300 microns.
ALL EDIBLE AND NON-EDIBLE CROPS (DESTRUCTION, BEFORE SOWING/ PLANTING	Vegetation management	-	Annual weeds Perennial grasses Perennial broad- leaved weeds	1.2 3.2 4.0	80-250 l/ha* or hand- held equipment	Do not use under polythene or glass. *Rotary atomisers may be used at a water volume of 40 l/ha. Ensure droplet diameter falls within the range 200-300 microns Do not use in or alongside hedgerows

AREA OF USE	TARGET WEEDS/ USAGE	CROP/ SITUATION	WEED INFESTATION	APPLICATION RATE l/ha	WATER VOLUME	APPLICATION TIMING AND GUIDANCE
GREEN COVER ON LAND NOT BEING USED FOR CROP PRODUCTION EG "SET ASIDE"	Common Couch	BEFORE or DURING REMOVAL FROM PRODUCTION	Up to 75 shoots/m ²	2.4	80-250 l/ha*	<p>Before using on land taken out of production as part of a grant aided scheme, ensure compliance with the management rules of that scheme.</p> <p>Do not 'top' or cultivate immediately before application.</p> <p>For PERENNIAL weed control, allow:- - 21+ days growth before spraying in spring - 5 days before cultivating or drilling.</p> <p>For ANNUAL weed control, allow: - 24 hours before cultivating.</p> <p>Do not direct drill after set aside.</p> <p>* Rotary atomisers may be used at a water volume of 40 l/ha. Ensure droplet diameter falls within the range 200-300 microns.</p> <p>Avoid applications during stem elongation as reduced control and re-spray is likely.</p>
	Perennial broad-leaved weeds and other perennial grasses		Over 75 shoots/m ²	3.2	or	
			All levels/species	3.2	hand-held equipment	
	Annual weeds: • early autumn/spring • late spring/summer		All levels/species	1.2	or	
			All levels/species	2.4	tractor mounted weed wiper	

AREA OF USE	TARGET WEEDS/ USAGE	CROP/ SITUATION	WEED INFESTATION	APPLICATION RATE l/ha	WATER VOLUME	APPLICATION TIMING AND GUIDANCE
GREEN COVER ON LAND TEMPORARILY OUT OF PRODUCTION EG "SET ASIDE" (continued)	Natural regeneration and cover crop destruction	AFTER SHORT ROTATION or LONG TERM REMOVAL FROM PRODUCTION	Annual weeds only Perennial grasses Perennial broad- leaved weeds Perennial broad- leaved weeds as listed below.	2.4 3.2 4.0 4.8+	150-250 l/ha or hand held equipment or tractor mounted weed wiper	Best control of annual grasses is achieved between full ear emergence and senescence. +Only for weeds listed as per grassland destruction application rate table below.
GRASSLAND - DESTRUCTION	Short rotation Ryegrass, longer leys and permanent pasture	GRASS	Short rotation Ryegrass with annual weeds Leys 2-4 years old with perennial grass weeds Long leys 4-7 years old with perennial broad- leaved weeds Permanent pasture See Weed Table below.	2.4 3.2 4.0 4.8	150-250 l/ha	Treat EITHER before grazing/mowing in June-Oct, when growth is 30-60 cm, not dense and lacking mature seeds, OR re-growth after grazing/mowing. Select the application rate which controls/destroys the least susceptible weed and grass species present in the sward. Grass may be conserved or grazed by cattle, dairy cows or sheep 5+ days after spraying. REMOVE POISONOUS PLANTS BEFORE GRAZING/MOWING. If Ragwort is present, the guidance in the 'DIRECTIONS FOR USE must be followed. ONLY direct drill grass and clover EITHER into 1-2 year leys without mat, 5+ days after spraying, OR long leys with some mat, in the spring following autumn application.

APPLICATION RATE FOR GRASSLAND DESTRUCTION							
2.4 l/ha		3.2 l/ha		4.0 l/ha		4.8 l/ha	
Annual Meadow-grass	Meadow Fescue	Black-bent	Creeping Soft-grass	Bracken**	Red Clover	Common Ragwort	Nardus (Mat grass)
Common Chickweed	Meadow Foxtail	Broad-leaved Dock	Curled Dock	Common Sorrel	Sedges	Hard Rush	Red Fescue
Common Mouse-ear	Rough Meadow-grass	Cock's-foot	Perennial Rye-grass	Common Nettle	Sheep's Sorrel	Heath Rush	White Clover*
Dock Seedlings	Speedwell species	Common Bent	Plantains	Creeping Buttercup	Soft Rush	Jointed Rush	Yellow Rattle
Italian Rye-grass	Timothy	Common Couch	Soft Brome	Creeping Thistle	Spear Thistle	Molinia (Purple Moor-grass)	Sheep's Fescue
Mayweed species		Creeping Bent	Yorkshire Fog	Daisy	Tufted Hairgrass		
				Dwarf Thistle	Yarrow		
				Perennial Sow-thistle			

* White Clover is best cut in June and sprayed one month later.

** At full frond expansion

AREA OF USE	TARGET WEEDS/ USAGE	CROP/ SITUATION	WEED INFESTATION	APPLICATION RATE l/ha	WATER VOLUME	APPLICATION TIMING AND GUIDANCE
ORCHARDS	Perennial grasses, broad-leaved weeds	APPLE, PEAR, PLUM, CHERRY, DAMSON	All levels of most species	4.0	Hydraulic sprayers including hand held 200-400 l/ha or Rotary atomisers at 40 l/ha	<p>Spray AFTER autumn leaf-fall and BEFORE: Apples, pears - green cluster stage Stone fruit - white bud stage</p> <p>Treat root suckers in late spring only.</p> <p>Trees must have been established 2+ years.</p> <p>Avoid contact with tree 30+ cm above ground.</p>
	Root suckers		-	4.0		
IN-CROP (TRACTOR-MOUNTED WEED WIPER APPLICATION)	Bolters, weed beet, other weeds	ARABLE CROPS AND GRASSLAND SET ASIDE	All levels	<p>1:1.5 dilution with water OR 1:2.75 dilution with water in hot, dry conditions.</p> <p>For 'new generation' wipers consult the manufacturer for guidance.</p>		<p>Weeds must be 10+ cm taller, and wiper 5+ cm higher, than desired vegetation.</p> <p>Wipe dense populations twice, in opposite directions. BOLTING BEET requires three applications, 2 weeks apart, from early July to early August.</p> <p>Contact Monsanto or your distributor for specific recommended weed wiper applicators.</p> <p>POISONOUS WEEDS and grazing/mowing interval - See GRASSLAND section.</p> <p>If Ragwort is present, the guidance in the 'DIRECTIONS FOR USE must be followed.</p>

AQUATIC WEED CONTROL

Roundup Energy herbicide controls emerged and floating aquatic weeds

AREA OF USE	TARGET WEEDS/ USAGE	WEED INFESTATION	APPLICATION RATE l/ha	WATER VOLUME	APPLICATION TIMING AND GUIDANCE
ENCLOSED WATERS, LAND IMMEDIATELY ADJACENT TO AQUATIC AREAS, OPEN WATERS	Emerged weeds: reeds, rushes, Sedges, grasses and Watercress	Dense infestations only	4.0	Hydraulic sprayers 200-400 l/ha (optimum 250 litres) or hand-held equipment	Users must consult the appropriate Environment Agency Regional Office or Scottish Environmental Protection Agency before applying MON 79545 herbicide in reservoirs, water courses and waterways. MON 79545 herbicide may be used for the control of aquatic weeds in the presence of fish if used in strict accordance with the recommendations in this section
	Floating weeds: -White Water-lily -Yellow Water-lily	Dense infestations only	4.8	Hydraulic sprayer 100-200 l/ha or hand-held equipment	On Water-lilies it is preferable to use a tractor or boat-mounted sprayer. During spraying, do not exceed a pressure of 2.0 Bars (30 p.s.i.). When using a tractor mounted sprayer, do not exceed 8 kph (5 mph). With a boat-mounted sprayer, use a slow forward speed to cause minimum disturbance to the floating leaves of the weeds. The use of a boat may result in some leaves being disturbed before MON 79545 herbicide can be absorbed. Applications made in flowing water should be sprayed against the directions of the flow. When disturbed by wash, WATER-LILIES may require re-treatment.

Application Rates

Situation	Equipment*	Area Treated	MON 79545	Water Volume
Emergent weeds e.g. reeds and grasses	Boom sprayer	1 hectare	4.0 litres/ha	200-400 litres (Optimum 250 litres)
	Knapsack sprayer**	100m ²	40ml/100m ²	2.0 litres
Floating weeds e.g. water-lilies	Boom sprayer	1 hectare	4.8 litres/ha	100-200 litres
	Knapsack sprayer**	100m ²	48ml/100m ²	2.0 litres

*Rotary atomisers may also be used at water volumes of 40 l/ha. The droplet diameter must fall within the range 200-300µm.

** Knapsack sprayer calibrated to 200 litres/ha.

Use boat-mounted sprayers at slowest practical speed. Always apply against direction of any current.

Mixing and spraying

Correctly calibrate all sprayers under field or use conditions prior to application.

a) **Tractor mounted and powered Hydraulic Sprayers**

These should be capable of applying accurately 80-400 l/ha within a pressure range of 1.5-2.5 bars (20-35 psi).

Half fill the spray tank with clean water, start gentle agitation, and then add the correct amount of Roundup Energy. Top up the tank with water to the required level. To avoid foaming do not use top tank agitation. Use of a de-foamer may be necessary

Medium Volume Application (150-300 l/ha)

Avoid high water volumes (> 300 l/ha) which may lead to run-off from the treated vegetation, resulting in reduced control. Low drift nozzles such as air induction and pre-orifice types producing a medium or coarse spray (BCPC definition) should be used to minimise the risk of drift :

Low Volume Application (minimum 80 l/ha)

Low volume application can be achieved by reducing pressure and appropriate nozzle selection. Low drift nozzles which produce a medium spray (BCPC definition) should be used to minimise the risk of drift.

b) Knapsack Sprayers

Recommended delivery range is 80 - 300 l/ha. Half fill the spray tank with clean water, add the correct amount of ROUNDUP ENERGY and top up with water, close the top and shake gently to ensure good mixing.

When used at a walking speed of 1 metre/second to apply a swath of 1 metre width, most knapsack sprayers fitted with a HYPRO AN 2.0 or similar nozzle deliver approximately 200 l/ha spray volume (or 10 l per 500 m²). To apply 3.2 l/ha of ROUNDUP ENERGY, therefore, use a 1.6% solution, i.e. 160ml ROUNDUP ENERGY made up to 10 litres. Similarly, knapsack sprayers fitted with low volume nozzles such as HYPROAN 1.0 typically deliver approximately 100 l/ha spray volume. To apply 3.2 l/ha ROUNDUP ENERGY in this case use 3.2% solution.

c) Rotary Atomisers

When rotary atomisers are used to apply Roundup Energy ensure that the droplet diameter falls within the range 200-300 microns for all uses. The water volume must be 40 litres/ha

d) Hand-held Wipers

Roundup Energy may be applied through the weed wiper mini. Use a concentration of 1 part Roundup Energy to 2.75 parts of water and add a scarlet dye if required. Care should be taken to avoid dripping onto wanted vegetation.

e) Spot Gun Applicators – for treatment of individual weeds

Apply 4 ml of spray to target weed, using a narrow cone TG-3 or TG-5 nozzle.

Spot Diameter (metres)	Amount of Roundup Energy (ml) per 5 litres of spray solution		
	2.4 l/ha	3.2 l/ha	4.0 l/ha
0.3	16	22.4	28
0.6	68	88	112

Compatibility

Do not tank mix Roundup Energy with adjuvants, pesticides or fertilizers except as advised by Monsanto. For up to date information on compatible products contact Monsanto UK Limited (tel: 01954 717575).

Do not tank-mix ROUNDUP ENERGY when using rotary atomiser sprayers.

For hydraulic sprayers: maintain continuous agitation when using ROUNDUP ENERGY in tank mixture.

For knapsack sprayers: mix thoroughly and use immediately when using ROUNDUP ENERGY in tank mixture.

COMPANY ADVISORY INFORMATION

This section is not part of the Product Label under the Plant Protection Products Regulations 1995 and provides additional advice on the product.

General Information

Roundup Energy is an advanced glyphosate formulation that offers a high standard of operator safety. To maximise the intrinsic safety of Roundup Energy to operator, consumer and environment, the label recommendations and the DEFRA/HSC/NAW publication "Code of Practice for Using Plant Protection Products" of January 2006, should be adhered to.

Roundup Energy herbicide is a foliar-acting herbicide with broad-spectrum activity. It is taken up by foliage and translocated to underground roots, rhizomes and stolons, providing control of both annual and perennial grasses and broad-leaved weeds. Roundup Energy is rapidly

adsorbed onto particulate matter in soils and water and is quickly degraded by the micro-organisms present in soil and aquatic bottom sediments. Upon adsorption, the herbicidal properties of Roundup Energy are lost, permitting drilling of crops within 48 hours of application. When used as directed, any water subjected to Roundup Energy spray drift may be used immediately for irrigation purposes. Until degraded, the active ingredient in Roundup Energy, glyphosate, is practically immobile in soils and is, therefore, unlikely to contaminate groundwater.

Roundup Energy is recommended for aquatic weed control.

Symptoms on the weeds

Symptoms of treatment are generally first seen 7-10 days, or longer (if growth is slow), after spraying. These take the form of leaf reddening followed by yellowing and are usually quicker to appear on grasses than on broad-leaved weeds. Reaction of nettles is slow. For aquatic weed control, on reeds and grasses leaf symptoms usually appear within 14-21 days of spraying in the early autumn. Complete foliage desiccation usually occurs 30-40 days after spraying. At this stage, the reeds can be cut and removed. During cold conditions leaf symptoms may not appear before natural dieback but no growth will occur in the season following spraying.

Exclusion Times

People, pets and wildlife need not be kept out of treated areas. It is best not to walk in areas where the spray is still wet as transfer to other vegetation may lead to unwanted damage to other foliage. Once the spray is dry this cannot occur.

Weed resistance strategy

There is low risk for the development of weed resistance to Roundup Energy. Strains of some annual weeds (e.g. Black-grass, Wild oats and Italian Ryegrass) have developed resistance to certain herbicides which may lead to poor control when using those herbicides. A strategy for preventing and managing such resistance should be adopted. This should include integrating herbicides with a programme of cultural control measures. Guidelines have been produced by the Weed Resistance Action Group and copies are available from the HGCA, CPA, your distributor, crop adviser or product manufacturer (Monsanto).

Growers are encouraged to implement a weed resistance strategy based on (a) good agricultural practices and (b) good plant protection practices by:

- Following label recommendations
- The adoption of complimentary weed control practices
- Minimising the risk of spreading weed infestations
- The implementation of good spraying practice to maintain effective weed control
- Using the correct nozzles to maximise coverage
- Application only under appropriate weather conditions
- Monitoring performance and reporting any unexpected results to Monsanto UK Ltd (Tel: 01954 717575)

General Cautions

Take extreme care to avoid drift, particularly when using near or alongside hedgerows. The use of low drift nozzles such as air induction and pre-orifice nozzles are recommended

Calibration

All sprayers should always be calibrated before use. This is essential when nozzles are changed or if a different dose of product is to be applied.

Unused Spray Mixture

Once Roundup Energy has been diluted in the spray tank, it should be used as soon as possible. However, if unexpected delays occur the diluted spray can be safely stored. Agitate well before use. Storage for longer than 3 days may result in reduced efficacy.

Sprayer Maintenance

Ensure the sprayer is in good working order and replace damaged, worn or malfunctioning parts before use. Carry out maintenance according to the instructions of the sprayer manufacturer.

Sprayer Hygiene

It is essential to thoroughly clean-out spray tanks, pumps and pipelines and nozzle or disc assemblies, with a recommended detergent cleaner, between applying this product and other pesticides to avoid contamination from pesticide residues.

Disposal

Follow the guidance on the disposal of surplus spray solution, tank washings, concentrate and containers as given in Section 5 of the DEFRA/HSC/NAW publication "Code of Practice for Using Plant Protection Products", January 2006.

Environmental Information Sheet

An Environmental Information Sheet for this product is available from the CPA's Voluntary Initiative website (www.voluntaryinitiative.org.uk)

Trade Mark References

Roundup® is a registered trade mark of Monsanto Technology LLC.

Monsanto™ and the vine symbol are registered trade marks of Monsanto Technology LLC.

All other brand names referred to are trade marks of other manufacturers in which proprietary rights may exist.

Monsanto does not warrant that the purchase or use of equipment mentioned in this document will not infringe any patent or trade mark registration.

SAFETY DATA SHEET

Following the instructions on this Product Label for the specified uses should ensure that the product is used safely and efficaciously for those uses.

A full Material Safety Data Sheet is available on request. Telephone Monsanto Technical Helpline on 01954 717575 or download from www.monsanto-ag.co.uk.