D50®

A soluble concentrate containing 500 g/l (42% w/w) 2,4-D as the dimethylamine salt.

For the selective control of the annual and perennial broad leaved weeds in winter and spring wheat, barley and rye, winter oats, undersown cereals, established agricultural and amenity grassland, managed amenity turf, apple and pear orchard floors.
Contents: XXXX

Batch No.: XXXX

FOR USE ONLY AS AN AGRICULTURAL, ORCHARD AND AMENITY AREA HERBICIDE

Safety Information

Danger

Harmful if swallowed.
Causes serious eye damage.
Very toxic to aquatic life with long lasting effects

Do not eat, drink or smoke when using this product.
Wear protective gloves/protective clothing/eye protection/face protection.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
Rinse mouth.
Dispose of contents/ container to a licensed hazardous-waste disposal contractor or collection site except for empty triple rinsed containers which can be disposed of as non hazardous waste.

Contains 2,4-D. May produce an allergic reaction.

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

PCS No.02366

PROTECT FROM FROST.
FOR PROFESSIONAL USE ONLY

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Additional Safety Phrases
DO NOT contaminate water with the product or its container (Do not clean application equipment near surface water/Avoid contamination via drains from farmyards and roads).

Crops	Maximum Individual Dose	Maximum Total Dose	Latest time of application
Winter Wheat, Winter and Spring rye	2.5 L/ha	2.5 L/ha	Before 1st node detectable stage
Spring Wheat, Winter and Spring Barley, Winter Oats	2.0 L/ha	2.0 L/ha	Before 1st node detectable stage
Wheat, Barley, Rye (undersown with grass)	1.0 L/ha	1.0 L/ha	Before 1st node detectable stage
Grassland	3.3 L/ha	3.3 L/ha	Before the crop is 25cm high
Amenity grassland and managed amenity turf	3.3 L/ha	9.9 L/ha	-
Apple (around), Pear (around)	2.8 L/ha	2.8 L/ha	-
Application Method	Hydraulic nozzle applicator / knapsack / tractor mounted sprayer		

DIRECTIONS FOR USE

RESTRICTIONS

- DO NOT use D50 on the seedbed before sowing any crop.
- DO NOT sow any crop into soil treated with D50 for at least 3 months after application.
- DO NOT graze grass for at least 14 days after spraying.
- DO NOT mow or roll four days before or after application. The first four mowings after treatment must be composted for at least 6 months before use.
- DO NOT treat newly established grass or turf less than 1 year old.
- DO NOT treat grass or turf suffering from stress caused by drought, frost, disease or other adverse factors.
- DO NOT roll or harrow crops for 7 days either before or after application of D50.

WEEDS CONTROLLED

Apply when the majority of annual weeds are at the seedling* stage. For the control of perennial weeds in established grassland, the best results are obtained if spraying is carried out shortly before flowering. Whilst spraying at this late stage will not give complete control of annual weeds, it may effectively check most of the species mentioned. A second application may be necessary to provide an adequate level of weed control on amenity grassland and managed amenity turf.

* Seedling = Fully expanded cotyledons to 2 expanded true leaves

Cereals

Weed species	Rate product/ ha	Comments
Charlock Mustard, Black	700 mL	These weeds will be completely or almost completely killed when applications are made in the cotyledon to early flower-bud stage
Fat Hen Mustard, Treacle Mustard, White Penny-cress, Field Tare, Hairy	1.4 L	These weeds will be completely or almost completely killed when applications are made in the cotyledon to early flower-bud stage
Buttercup, Corn Nettle, Small Radish, Wild Shepherds Purse		These weeds will be completely or almost completely killed when applications are made in the cotyledon up to 2 leaf stage or moderately susceptible at 4 leaves to early flower-bud stage
Forget-me-not, Field Orache, Common Poppy, Common Sowthistle, Prickly Sowthistle, Smooth Turnip, Wild		These weeds will be moderately susceptible (with or without mortality) when applications are made in the cotyledon up to 2 leaf stage or moderately resistant at 4 leaves to early flower-bud stage
Bindweed, Black Bugloss Bugloss, Viper's Chickweed, Common Cranesbill, Dove's-foot Field-speedwell, Common Fumitory, Common Gromwell, Field Groundsel Knotgrass Mouse-ear, Common Nightshade, Black Persicaria, Pale Pimpernel, Scarlet Redshank Shepherd's needle Speedwell, Green Field Speedwell, Ivy-leaved Speedwell, Wall Spurge, Sun		These weeds will be moderately resistant when applications are made in the cotyledon up to 2 leaf stage or resistant at 4 leaves to early flower-bud stage
Orache, Common Poppy, Common Sowthistle, Smooth	2.0 L	These weeds will be susceptible when applications are made in the cotyledon up to 4 leaf stage or moderately resistant at 6 leaves to early flower-bud stage
Knotgrass Mayweed, Scentless	2.0 L	These weeds will be moderately resistant when applications are made in the cotyledon up to 2 leaf stage or resistant at 4 leaves to early flower-bud stage
Thistle, Creeping*	2.0 – 2.5 L	These weeds will be susceptible when applications are made in the cotyledon up to early flower-bud stage

*Aerial growth only

Hoary Cress – Good control of this perennial weed can be achieved by treatment in winter cereal crops over two successive seasons using 1.6-1.8 l/ha dose of D50. Apply after the shots are 25-150 mm high up to but before flowering.

Amenity grassland and managed amenity turf

Weed species	Rate product/ ha	Comments
Buttercup, Creeping Hawkweed, Mouse-ear Plantains Thrift	2.8L	These weeds are consistently killed by one application
Bedstraw, Heath Buttercup, Bulbous Cat's-ear Chickweed, Common Daisy Dandelion Dock, Curled Hawkbit, Rough Hawk's-beard, Smooth Pennywort, Marsh Sea-milkwort Sorrel, Common Sorrel, Sheep's Stork's-bill, Common Stork's-bill, Sea Thistle Dwarf		Sometimes killed by one application but may require a second treatment to give complete control
Celandine, Lesser Mouse-ear, Common Pearlwort, Procumbent Selfheal Yarrow		Some effect from one application, but two applications required to give a useful level of control
Ragwort, Common*	3.3 L	Moderately susceptible. Sometimes killed by one application but may require further treatment to give complete control

*treatment will normally kill plants at all stages of growth up to early bud stage. For best levels of control, treat April-June when rosettes are growing strongly but before flower buds are well formed.

Agricultural grassland (including grass floors under apple and pear trees)

Weed species	Rate product/ ha	Comments
Buttercup, Creeping Hawkbit, Autumn Hawk's-beard, Rough Plantain, Greater Plantain, Hoary Plantain, Ribwort Sandwort, Thyme-leaved	2.8 L	These weeds are susceptible at all stages of growth up to the beginning of flowering with good control of shoots and roots in established plants
Buttercup, Bulbous Dock, Broad-leaved		Seedlings and shoots are susceptible but established plants in grassland will not be controlled
Dandelion Dock, Curled Nettle, Common Rush, Soft * Thistle, Creeping		Seedlings and shoots are susceptible but only aerial growth of established plants is usually controlled
Thistle, Spear		Seedlings are susceptible but only aerial growth of established plants is usually controlled
Bartsia, Red Bindweed, Hedge Burdock, Lesser Buttercup, Meadow Cat's-Ear Chicory Cress, Hoary Daisy Dock, Clustered Fleabane, Common Goatsbeard Hawk's-beard, Smooth Hawkbit, Rough Hawkweed, Mouse-ear Hempnettle, Large-flowered Knapweed, Common Knawel, Annual Mugwort Oxtongue, Bristly Plantain, Buck's-horn Purple-loosestrife Radish, Horse Scabious, Field Self-heal Thistle, Musk Thornapple Vetch, Common Vetch, Tufted		These weeds are well controlled in the seedling or shoot stage with useful suppression or death of aerial parts at later growth stages
Horsetail, Field ** Horsetail, Marsh **	2.8 L	Only controls shoots which are well developed (preferably about 30 cm high). Control of established plants is variable. Re-growth will occur in following season
Sorrel, Common Sorrel, Sheep's Sowthistle, Perennial		Provides useful control of shoots only

Weed species	Rate product/ ha	Comments
Bindweed, Field**** Ragwort, Common***	3.3 L[+]	Moderately susceptible. Aerial growth usually killed and a useful measure of long term control obtained under suitable conditions

* May be controlled by application in April to June when growing well. For best results, cut the rushes 4 weeks after treatment or cut them 4 weeks before application and remove stems before spraying

** Use 2.8 litres per hectare and spray when growing well in May or early June. Top growth is removed or considerably reduced for the season of treatment. In grassland for hay or silage, shoot kill may be obtained by using 2.0l/ha two weeks before cutting.

*** Treatment will normally kill plants at all stages of growth up to early bud stage. For best levels of control, treat in April-June when rosettes are growing strongly but before flower buds are well formed.

**** In order to obtain maximum effect in the year after treatment, spraying should be delayed until shoots are well developed.

[+] Application rate of 3.3 L/ha is not permissible around apple and pear trees for the control of common ragwort, although a maximum individual dose and maximum total dose of 2.8 L/ha is permitted.

Ragwort control

Rate of use
Agricultural grassland: D50 at 2.8 L/ha + Agritox 500 (PCS No. 05499) at 2.0 L/ha

Do not apply 2.8 L/ha D50 alone as this will not give reliable control of Ragwort.

Timing

Agricultural grassland (including grass floors under apple and pear trees), Amenity grassland and Managed amenity turf

Spray when the majority of plants are in the rosette stage and growing vigorously in the autumn or spring but before the flower spines start to grow. D50 should be applied in good growing conditions. Treatment of Ragwort should always be part of a programme and repeat application may be necessary together with removal of any flower heads in the summer to reduce seed return to the soil. Fields for hay or silage the following spring should be sprayed in the preceding autumn. Fields to be grazed should be treated in the spring.

NB. It is important that all livestock are kept out of treated areas for at least two weeks following treatment and until the Ragwort has died and become unpalatable.

CROP SPECIFIC INFORMATION

Crop	Dose (L product/ha)	Maximum Total Dose (L product/ha)	Timing and remarks
Winter Wheat, Winter and Spring Rye	0.7 - 2.5	2.5 per crop	<u>Winter Cereals:</u> Apply in the spring from the leaf sheath erect stage but before the 1st node detectable stage <u>Spring Cereals:</u> Apply from the 5 leaf fully expanded stage but before the 1st node detectable stage

Winter and Spring Barley, Winter Oats, Spring Wheat	0.7 – 2.0	2.0 per crop	<u>Winter Cereals:</u> Apply in the spring from the leaf sheath erect stage but before the 1st node detectable stage <u>Spring Cereals:</u> Apply from the 5 leaf fully expanded stage but before the 1st node detectable stage
Wheat, Barley, Rye (undersown with grass)	1.0	1.0 per crop	Apply in the spring following the same recommendations as for cereals. DO NOT spray with D50 before undersowing. Experience has shown that when weeds and cereals form a canopy undersown crops may be safely treated using not more than 1.0 L/ha at low volume.
Rotational and Permanent Grassland established for at least one year. Do not use where clovers are an important part of the sward	3.3	3.3 per year	Apply in spring to autumn at the optimum timing when grass density is low, such as after cutting or grazing, but when weeds are at a susceptible stage. Grassland may be treated with 2.8-3.3 L/ha of D50 according to the weeds present. Recommended rates are given in the weed susceptibility table for grassland.
Grass floors under apple and pear orchards. The orchards must have established for at least one year. Do not apply directly to trees	2.8	2.8 per year	Apply in spring or autumn when weeds are actively growing. Do not spray during blossom or whilst weeds are in flower. Use low pressure nozzles to avoid spray drift. Bramley Seedling, Emneth Early and Miller's Seedling are particularly susceptible to spray drift. Pears are more susceptible to spray drift than apples and are particularly susceptible to damage via root uptake.
Amenity Grassland and Managed Amenity Turf (established for at least one year).	3.3	9.9 per year	Apply in spring/summer or autumn when the growing conditions are favourable. Amenity grassland and managed amenity turf may be treated with 2.8-3.3 L/ha of D50. The expected levels of control are detailed in the weed susceptibility table for amenity uses. Some perennial weeds will need subsequent application in order to achieve adequate control. A follow up application may also be needed where new seedling weeds appear. An interval of 4 – 6 weeks should elapse between applications. Clovers will receive a check. Top dressing ten days before treatment is

			recommended to assist kill of weeds and subsequent recovery of the sward.

See under 'Weeds Controlled' for specific application rates for individual weeds.

D50 may be used on all varieties of the listed crops within the recommended growth stages. DO NOT treat barley intended for malting, spring oats or any cereal mixture with peas or beans or other legumes.

Apply in at least 110 L/ha water. In grassland and turf, where weeds might be shielded by grasses, use 400 l/ha water. Refer to the table for special situation pertaining to grass floors under apples and pears.

MIXING AND SPRAYING

Before use ensure that the spraying equipment has been thoroughly cleaned. Half-fill the spray tank with clean water. With the contents of spray tank under re-circulation, add the measured quantities of D50 through the filter. Top up the tank with water to the required level and maintain re-circulation until the tank is sprayed out.

Apply the recommended quantity of D50 through a conventional hydraulic sprayer using a MEDIUM spray to cover the weed leaves evenly and thoroughly.

Avoid spray drift onto neighbouring crops and all broad-leaved plants outside the target area. Do not spray in windy weather. Beets, all brassicas (including oilseed rape, swedes and turnip) lettuce, sunflowers, onions, peas, potatoes, tomatoes, cucumbers, all fruit crops (including vines) and ornamentals are particularly susceptible to 2,4-D and may be damaged by spray drift.

After each days use, wash out with water and wetting agent. Wash out again with water, drain and allow to dry. Traces of herbicide left in the sprayer may damage susceptible crops if these are subsequently sprayed using the same equipment.

Hand-held applicators

Knapsack Applicator:
These may be used in Orchards and Grassland areas.

Example of Use:

Examples for a 10 L sprayer delivering 200 L spray/ha:

Equivalent Application Rate	Sprayer Size	Volume D50 (Litres)	Volume Water (Litres)	Area treated
2.8 L product/ha	10 L	0.140	9.860	500 m^2
3.3 L product/ha	10 L	0.165	9.835	500 m^2

WEATHER AND GROWING CONDITIONS

Apply to a dry crop when rain is not forecast for at least 12 hours. Optimum results are obtained when the weeds are actively growing under good soil and weather conditions. Reduced weed control may be obtained during drought or cold weather. If rain falls shortly after application, the effect of D50 may be reduced.

RESISTANCE MANAGEMENT

When herbicides with the same mode of action are used repeatedly over several years in the same field, selection of resistant biotypes can take place. These can propagate and may

become dominating. A weed species is considered to be resistant to a herbicide if it survives a correctly applied treatment at the recommended dose. A strategy for preventing and managing such resistance should be adopted. This should include integrating herbicides with a programme of cultural control measures.

TERMS AND CONDITIONS OF SUPPLY, SALE OR USE

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ACKNOWLEDGEMENTS

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