

# Midstream® GSR

An effective aquatic herbicide for long term weed control in water courses including still and slow flowing water



Aquatic plants occur naturally in almost all water bodies from garden ponds to large reservoirs, in golf course lakes and drainage ditches, canals, streams and rivers.

Aquatic plants are regarded as weeds when they become troublesome – impeding the flow of water, causing siltation which in turn interferes with drainage. The appearance of ornamental water may be spoilt by weed growth itself, or by the collection of rubbish and debris caught in the weed mass.

When this happens, or preferably before it happens, some form of management to control growth is necessary.

Traditional methods of aquatic weed control involve cutting, either by hand or with a specialised weed cutting boat. These methods, however, can be time consuming and regrowth is often rapid. In addition, the cut vegetation needs to be removed. The modern alternative is 'Midstream' GSR, a powerful and long lasting aquatic herbicide.

## What is 'Midstream' GSR

'Midstream' GSR is a granular aquatic herbicide containing dichlobenil, and is approved for use in water to control a wide range of broad-leaved emergent weeds, most submerged and also rooted floating species.

After application to the water surface 'Midstream' GSR granules sink to the hydrosol with the chemical located in the top few centimetres of soil. It is then taken up by the roots causing death of susceptible weeds. The dose of 'Midstream' GSR is thus not related to water volume.

As 'Midstream' GSR is relatively insoluble, it does not move laterally in the soil and therefore allows for the partial treatment of submerged weeds. This is important where fish are present as too much rotting vegetation can lead to deoxygenation of the water.

## Where to use

'Midstream' GSR is intended for use either in still water-bodies such as ponds, lakes and reservoirs, or in sluggishly flowing water courses – drains, ditches, canals etc – providing the flow rate does not exceed 90 metres/hour (25 cm/10 sec). It is not recommended in faster flowing water unless the flow can be checked for a minimum of seven days after application.

If fish are known to be present then partial treatment with 'Midstream' GSR should be adopted to provide weed-free swims.

## Midstream GSR

Contains 20%w/w dichlobenil

- A granular formulation for ease of use.
- Controls a wide range of broad-leaved emergents, most submerged and also rooted floating weeds.
- Slow release activity gives season long control from one application.
- Root uptake enables treatment in fisheries.

Pack size:  
5kg carton

Packs per outer:  
4 x 5kg

Pack coverage:  
1,000-1,800sq.m

Suggested use period

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
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## When to use

Application should be made early in spring as soon as active weed growth commences, usually in the period March to May.

The more active the weed growth, the better the uptake of herbicide and level of control. When weed growth is nearing the surface, cell division slows down and the herbicide becomes less effective. Furthermore the weeds prevent the granules from sinking to the bottom and so interfere with the performance of the product. Early application minimises the risk of deoxygenation caused by dying and rotting vegetation.

A single application at this time will provide effective control of susceptible weeds for an entire season.

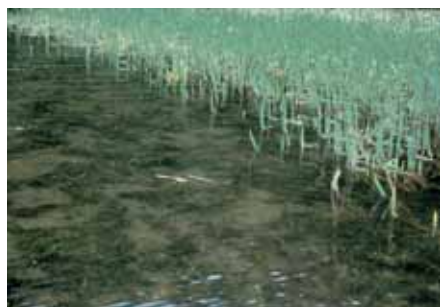
### 1. Total Treatment

Apply in spring (March-May) as soon as active weed growth commences. This overcomes the likelihood of subsequent water deoxygenation due to the die-back of heavy weed stands.



## 2. Partial Treatment

By ensuring the maintenance of adequate refuge areas needed by fish when lying up or spawning and which form the habitat of many aquatic invertebrates, partial treatment ensures the maintenance of adequate food chains with minimum disruption to the aquatic habitat. It also enables substantial reduction in the costs of treatment.



Although the recommended timing is in the early spring, partial treatment can be made later once it can be seen where localised control is required. But as this may then increase the risk of

deoxygenation caused by weed die-back, it is inadvisable to treat more than 10-20% of the waterbody. Partial treatment is most effective on those weeds having extensive root systems in the mud such as *Myriophyllum* spp, *Hippuris vulgaris* etc. It is NOT effective for control of detached or free floating weeds

### How to use

Apply by hand, air assisted motorised knapsack or other mechanical applicators, direct to the water surface or exposed hydrosol. Care should be taken to ensure even distribution of granules.

### Application Rate

Water Depth		Rate	
mm	ft	kg/ha	lb/ac
600	2	28*	25*
900	3	40	37
>900	>3	50	34

\*Note: It is impracticable to apply this rate to waterbodies less than 1.5m (5ft) in width. For waterbodies less than 1.5m

(5ft) in width and 600mm (2ft) in depth, use 'Casoron' G.

Consult current product label before use.

### Other Information

- MAPP No. 11674.
- Users must consult the appropriate water regulatory body (The Environment Agency/Scottish Environment Protection Agency) before using the product in or near water and must obtain their agreement before using this product to control aquatic weeds.
- Treated water should not be used for irrigation within 14 days of application, and until concentration of dichlobenil in the water is below 0.3ppm.
- Keep granules dry before treatment.
- Empty 'Midstream' GSR containers can be collected and disposed of from the UK mainland by using Scotts Container Collection Scheme. Telephone 0845 7125398 for details.

### Weeds Controlled

#### Susceptible

Sub. <i>Callitriche stagnalis</i>	Common Water-starwort
Sub. <i>Ceratophyllum demersum</i>	Rigid Hornwort
Alg. <i>Chara</i> spp	Stonewort
Sub. <i>Elodea canadensis</i>	Canadian Waterweed
Em. <i>Equisetum fluviatile</i>	Water Horsetail
Em. <i>Equisetum palustre</i>	Marsh Horsetail
Sub. <i>Fontinalis antipyretica</i>	Willow Moss
Em. <i>Glyceria fluitans</i>	Floating Sweet-grass
Em. <i>Hippuris vulgaris</i>	Mare's-tail
Fl. <i>Hydrocharis morsus-ranae</i>	Frogbit
Sub. <i>Hottonia palustris</i>	Water-violet
Sub. <i>Lemna trisulca</i>	Ivy-leaved Duckweed
Sub. <i>Myriophyllum</i> spp	Water-milfoil
Sub. <i>Potamogeton crispus</i>	Curled Pondweed
Sub. <i>Potamogeton pectinatus</i>	Fennel Pondweed
Sub. <i>Ranunculus</i> spp	Water-Crowfoot
Em. <i>Rumex hydrolapathum</i>	Water Dock
Em. <i>Sagittaria sagittifolia</i>	Arrowhead
Em. <i>Stratiotes aloides</i> *	Water-soldier
Sub. <i>Zannichellia palustris</i>	Horned Pondweed

#### Moderately Susceptible

Em. <i>Alisma plantago-aquatica</i>	Water-plantain
Em. <i>Berula erecta</i>	Lesser Water-parsnip
Em. <i>Oenanthe</i> spp	Water-dropworts
Fl. <i>Potamogeton natans</i>	Broad-leaved Pondweed

Em. *Rorippa nasturtium-aquaticum* Water-cress

#### Moderately Resistant

Fl. <i>Nuphar lutea</i>	Yellow Water-lily
Fl. <i>Nymphaea alba</i>	White Water-lily
Fl. <i>Polygonum amphibium</i>	Amphibious Bistort
Sub. <i>Potamogeton lucens</i>	Shining Pondweed
Em. <i>Sparganium erectum</i>	Branched Bur-reed

#### Resistant

Em. <i>Butomus umbellatus</i>	Flowering-rush
Em. <i>Caltha palustris</i>	Marsh-marigold
Em. <i>Carex</i> spp	Sedges
Em. <i>Iris pseudacorus</i>	Yellow Iris
Em. <i>Juncus effusus</i>	Soft Rush
Fl. <i>Lemna minor</i>	Common Duckweed
Em. <i>Phalaris arundinacea</i> *	Reed Canary Grass
Em. <i>Phragmites communis</i>	Common Reed
Em. <i>Scirpus lacustris</i>	Common Club-rush
Em. <i>Typha latifolia</i>	Bulrush
Alg. All filamentous algae (cott)	

\* In certain areas these plants, because of their rarity, is of botanical interest and importance. Where present, local naturalists should be consulted before treatment.

KEY Alg. = Algae  
Fl. = Floating spp

Em. = Emergent spp  
Sub.= Submerged spp



## Emergent Narrow Leaved Plants

These include the rushes, reeds and sedges. They normally grow along the banks and in shallow water up to a maximum of about 1 metre depth. Many species have underground stems (rhizomes) buried in the mud from which they grow each year. Any form of control leaving rhizomes intact can have only a short term benefit. Examples: Common Reed, Bur-reed, Mare's-tail, Pond Sedge, Club rush, Reed Sweet Grass.



Mare's-tail



Reed Sweet Grass



Water Soldier



Water Horsetail

## Emergent Broad Leaved Plants

Most species in this group grow on the banks or in shallow water. Some are capable of reproducing by seeds and many are perennial. Control methods should normally be used before flowering to prevent the plant from producing seeds. Examples: Water plantain, Purple-loosestrife, Water-cress, Arrowhead.



Arrowhead



Water Plantain



Purple Loosestrife



Water Cress

## Floating Plants

**Free-floating Plants** with roots which are suspended in the water that usually grow rapidly and can produce a dense cover on the water surface. Examples: Duckweeds, Water Starworts, Frogbit. Some reproduce asexually, by dividing or budding off daughter plants, so that even after control has been used a few surviving plants can quickly recolonise a water bed.

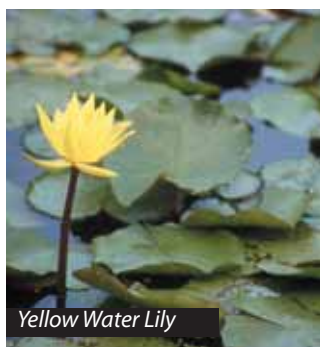


Frogbit



Water Starwort

**Rooted** These species are rooted in the hydrosol, but produce leaves which float on the surface. Examples: Yellow Water-lily, Sweets Grasses, Broad-leaved Pondweed. Rooted species tend to grow and spread more slowly than free-floating forms. They are more difficult to control because they can re-establish quickly from their root and rhizome systems.



Yellow Water Lily



Curled Pondweed

## Submerged Plants

Most species are rooted in the bottom sediment and can grow in a range of conditions from fast flowing rivers to still waters. Although the majority of the plant remains submerged, flowers and a few leaves may reach the surface. Examples: Water Milfoil, Water Crowfoot, Canadian Waterweed and Water-violet.



Water Violet



Hornwort

A few submerged plants do not produce roots and drift freely in the water. They tend to occur most frequently in static or slow-flowing waters. Examples: Hornwort, Ivy-leaved Duckweed. Many of these plants can regrow from fragments so that cutting, which generates many broken pieces, can help to spread the weeds.