Primary Industries, Water, and Environment

Service Sheet

PRODUCED BY THE DEPARTMENT OF PRIMARY INDUSTRIES, WATER, AND ENVIRONMENT

Revised 11/02
105 / 97
Agdex 647

Glyceria/Reed sweetgrass
(*Glyceria maxima* (Hartm.)Holmb.)

Identification and Characteristics

Glyceria is a robust perennial aquatic grass found throughout Tasmania. It is an introduced plant from Europe, and is capable of forming large infestations in a short period of time. It prefers well aerated water, with growth and reproduction dramatically slowing as conditions become anaerobic. It is one of the two most troublesome aquatic weeds in the state, the other being cumbungi.

Glyceria produces an extensive root system to approximately 1.0m depth. It also forms a sprawling mat of rhizomes, or underground stems, which comprise 40-55% of the plant's total biomass. These rhizomes produce vast numbers of shoots to quickly expand the plant's size.

The leaves of glyceria are shiny, hairless and mid-green in colour. They grow 300-600mm above the water surface and are 7-20mm wide. They end in an abrupt point and the margins (edges) are rough to touch as the finger is drawn from tip down to the base.

The leaves and inflorescence (flower structure) arise from stout, erect stems. The stems age from the mid-green of the leaves to a dry, pale brown colour.

Glyceria produces an open, branched inflorescence 150-450mm long in spring and summer, comprising a large number of spikelets that range from yellow to green in colour, with a purplish tinge. Each spikelet is narrow and 5-12mm long.

The plant's growth slows and stops at the onset of cooler temperatures in winter. Growth recommences in spring with a flush of new shoots arising from buds formed along the rhizomes. On young plants, these shoots can be vegetative or flowering. On established plants, the majority of new shoots produced are solely vegetative. This variability of its reproductive behaviour allows the plant to quickly colonise other areas by producing seed from young satellite infestations, whilst increasing density of established plants at the centre of infestations.

Distribution

Glyceria is a native of temperate regions of Europe and Asia. It has been introduced to North America, the British Isles and New Zealand, and all southern states of Australia. Its status as a weed within Australia is only significant in Tasmania.

Glyceria is found throughout Tasmania in rivers, creeks, dams, drains and other waterways growing in depths of up to 2.0 metres. In deeper waterways it sometimes forms vast floating mats which remain attached to the bank.

In recent years in Tasmania infestations have also established on a number of roadsides in the absence of permanent standing water. Such infestations have proved capable of surviving through the dry summer periods and progressively spreading from season to season.

Glyceria is used as a nutritious wetland fodder for cattle throughout Europe, however in Australia and New Zealand it accumulates toxic levels of hydrocyanic acid which has resulted in cattle deaths from cyanide poisoning. For this reason the plant should be quickly controlled in any grazing areas.

Dispersal

Glyceria produces vast numbers of dark brown seeds, 1.5 - 2 mm long, throughout summer and autumn. These seeds have varying levels of dormancy, with a majority of seeds able to germinate immediately, whilst others are genetically-bound to remain dormant for several years.

Seed may be spread on water, in mud on machinery and vehicles, on footwear and on livestock. Glyceria seed is not readily spread by wind.

Germination generally occurs in spring, with seedlings quickly developing an extensive mat of roots and rhizomes throughout summer and autumn. These rhizomes give rise to vegetative shoots in the first year, and both vegetative and flowering shoots in subsequent years. The vigorous growth exhibited by glyceria in its early years slows as the infestation becomes increasingly denser.

Glyceria may also be propagated by small sections of rhizome being moved around in mud on machinery and implements etc. Strict hygiene practices such as thorough cleaning of any equipment that comes into contact with the plant or soil, should be followed whenever any work is carried out in the vicinity of glyceria infestations.

Economic significance

Dense stands of glyceria may restrict access to waterways, impede water flow, cause local flooding, reduce the holding capacity and accelerate siltation. In many instances small, shallow dams have been filled-in and rendered practically useless.

In rivers, creeks, and irrigation and drainage channels, initially the stems slow the water velocity, then silt and other debris is trapped and builds up. The reduced flow rate of water may also create suitable environments for mosquito larvae and other pests.
Destruction of the weed can result in a large amount of decaying vegetation that may pollute the water or block pump intakes and channels and ditches. Management practices should plan to not only kill the plant, but also remove it.

Useful Properties

Glyceria can provide shelter for waterbirds and other aquatic organisms. As it slows water movement it can be useful for reducing erosion of riverbanks.

Status under the *Weed Management Act 1999*

Glyceria is not a declared weed in Tasmania at this time.

Control

Glyceria quickly becomes a large and vigorous plant, therefore any new infestation should be treated as early as possible. Destroying the young plants at an early growth stage, before they have become established or produce seed, is the most economical and effective method of control. If control is delayed until the infestation is established, eradication in one season is improbable and follow-up work over at least two or three seasons will be required.

Mechanical Control:

Hand Removal

Manual removal works best with small plants. They are often easy to pull out due to the moist soil around their roots. Spades can help when hand removal is difficult. Any manual removal must aim to remove all pieces of the roots and rhizomes, otherwise the plant may quickly regrow.

Excavation

Mechanical removal of larger plants in their entirety is difficult as roots and rhizomes can extend very wide and deep from the parent plant, and may be missed during excavation. This method can however be useful at reducing the size of large infestations, allowing easier follow up by manual removal of small plants and regrowths.

Excavated material should be dumped well away from the area at a site where it can dry out and kill all plants.

Mechanical excavation has the advantages that there are neither herbicide residues left in the water nor problems arising from decomposition of dying plant material. The capacity of the storage may also be increased by such operations.

Care must be taken when using heavy equipment near waterways to avoid damage to the structure of the waterway.

Cultivation

If low water levels permit, an alternative to excavation may be to cultivate the soil and root areas in autumn. This brings root and rhizome material to the surface to allow winter frosts to desiccate the material. This method will give good control over small infestations, and reduce the size of large infestations to more manageable levels.

Great care must be taken to thoroughly clean all machinery after cultivation, to reduce the risk of spreading rhizome material.

Chemical Control:

Where a large area has been invaded herbicides can be used to control glyceria. This option can have disadvantages. The mass of decaying vegetation after treatment reduces the holding capacity of the dam and provides ideal conditions for invasion by other species or a re-invasion of glyceria. Anaerobic decomposition of the dead plant material may render the water foul and unfit for use. In such cases mechanical cleaning by backhoe, bulldozer or dragline will be needed to restore the dam to its original state.

Most herbicides used near waterways in the past have been de-registered for use in these situations. It was found some of the additives used in the herbicides were toxic to aquatic organisms, particularly frogs. Herbicide manufacturers responded with new formulations that don't use these additives. At the time of printing one such glyphosate product, Roundup Biactive®, had been registered for use on glyceria near waterways, with others likely to follow.

Foliar Spray

Herbicides such as glyphosate that are translocated through all parts of the plant, including the deep rhizomes, are ideal for glyceria control. A complete coverage of all foliage is necessary, although avoid spraying to run-off stage. Great care must be taken to minimise drift to other areas such as the water surface.

Application of herbicides is best done in late summer and autumn.
Plants which have more than about one-third of their stems below water may not be killed by herbicide. Whenever practicable the water level should be lowered to give the maximum possible plant exposure before treatment, and kept down for at least 12 hours after application.

Wiping

An alternative to spray application is the use of a wiper. Wipers may be small hand-held units, or larger frame units that can be mounted on or towed by three and four wheel bikes and tractors. The hand held units usually have a thick rope wick at the end. Larger wipers come in a variety of styles, using materials such as rope wicks, felt strips or rolling carpet.

Wiper application of herbicides permits the operator to apply the herbicide directly onto the foliage, with minimal risk of run-off or drift. It applies an even coat of herbicide to the required area of the target plant, yet leaves non-target plants untouched.

No herbicides are registered for glyceria control by wiper application in Tasmania at the time of printing. As wiping offers many advantages over spraying, the DPIWE should be contacted prior to undertaking chemical control of glyceria for information on any new herbicides that have subsequently been registered for wiper use.

Bee Careful !

Some herbicides are toxic to bees. As a general rule, avoid applying herbicides when and where bees are foraging. Always read the label.

Disclaimer:
These herbicide recommendations are made subject to the product being registered for that purpose under relevant legislation. It is the user's responsibility to check that registration or an off-label permit cover the proposed use. Always read the herbicide label.

If in doubt, check with the Registrar of Chemical Products, Department of Primary Industries, Water and Environment. Statewide Freecall 1300 368 550.

Glyceria control in and around waterways.

Type of Application	Herbicide (Active ingredient)	Commercial products (Content of active ingredient)	Rate of commercial product per L	Comments
Spot Spray*	glyphosate	Roundup Biactive® (360g/L) Weedmaster 360® (360g/L)	13 ml/L	Apply late summer to autumn. Complete foliage cover is needed. Avoid run-off or spray drift entering water.
Boom Spray*	glyphosate	Roundup Biactive® (360g/L) Weedmaster 360® (360g/L)	6 L/Ha	Apply late summer to autumn. Complete foliage cover is needed. Avoid run-off or spray drift entering water.

Glyceria control away from waterways, such as dry channels, drains and roadsides.

Type of Application	Herbicide (Active ingredient)	Commercial products (Content of active ingredient)	Rate of commercial product per L	Comments
Spot Spray	glyphosate	Roundup Biactive® (360g/L) Weedmaster 360® (360g/L) Glyphosate 360® (360g/L) And other glyphosate products	13 ml/L “ “	Apply late summer to autumn. Complete foliage cover is needed.
Boom Spray	glyphosate	Roundup Biactive® (360g/L) Weedmaster 360® (360g/L) Glyphosate 360® (360g/L) And other glyphosate products	6 L/Ha “ “	Apply late summer to autumn. Complete foliage cover is needed.

Note: Addition of adjuvants to most herbicides alters their effectiveness. Carefully consult each product’s label for specific directions before adding any adjuvant.