

Water hyacinth

Water hyacinth, *Eichhornia crassipes* is a declared Class 2 plant under the Land Protection (Pest & Stock Route Management) Act 2002. Under the Act landholders are required to maintain their property free of Class 2 pests. It is important to note that it is also an offence to keep or sell water hyacinth without a permit. Significant areas of Queensland have already been impacted by water hyacinth, and this Class 2 pest requires significant resources to manage current infestations and to contain any further spread.



Water hyacinth is a free-floating perennial waterweed that forms large, dense mats on the water surface and has been found in every mainland State and Territory but has become established as a major pest in coastal Queensland and New South Wales in fresh, static or slow moving water with high organic content. It is native of the upper Amazon catchment, is listed as one of the most productive plants on earth, and is considered one of the world's worst aquatic weeds.

It arrived in Australia in the 1890s spreading into creeks, rivers and dams where it flourished with no natural predators to keep it in balance. Experience shows that the plants reproductive capacity, adaptability, nutritional requirements and resistance to adverse environments make it almost impossible to eradicate, and extremely difficult to control. Once in rivers, dams and lakes, and under favourable conditions an infestation can double in size every five days.

Water hyacinth is a floating waterweed with a fibrous root system and dark green rounded leaves. Each plant consists of several glossy green, leathery leaf blades which can grow up to 20 centimetres in length and 5 to 10 centimetres in width. Numerous dark, branched, fibrous roots dangle in the water from the underside of each plant. The flowers have six petals, are light purple with a darker blue and yellow centre, and are carried in dense spikes held above the plant. It can reproduce vegetatively, with a three celled fruit capsule containing vast quantities of minute, ribbed seeds. These seeds are long lived and may survive in the mud for up to 20 years and can also remain viable for very long periods in dry soil.

Water hyacinth grows in still or slow moving fresh water that contains abundant supplies of nitrogen, phosphorus and potassium. Temperatures between 28°C and 30°C provide suitable conditions for optimum growth producing dense mats of water hyacinth on the water surface that interfere with navigation, recreation and irrigation. Low oxygen conditions develop beneath the mats where the water flow is impeded providing an ideal breeding ground for mosquitoes. These floating water hyacinth mats competitively exclude native submerged and floating aquatic plants, destroy natural wetlands, restrict livestock access



to water, block irrigation channels, reduce the water quality, and increase water loss by up to four times.

Water hyacinth reproduces sexually by seeds and vegetatively by budding and stolon production. In spring overwintering plants initiate growth by producing daughter plants. These plants slowly increase in number and size during spring and summer, and are in full bloom during summer and early autumn. Seeds form on the submerged, withered flower and can germinate in a few days or remain dormant for years. Autumn and winter frosts can cause the leaves to die off but the crowns are capable of overwintering. These crowns will commence new growth in the following spring along with the germination of seeds.

Water hyacinth is difficult to manage and control in all freshwater aquatic environments. Early detection and rapid response provide the best chance of success. It is easier and cheaper to prevent weed establishment when small infestations are treated quickly. An integrated approach is best used to manage water hyacinth infestations combining chemical, mechanical and biological control measures.

Water hyacinth can be removed by hand or machine and is a practical method for small infestations and as part of an integrated management approach. Mechanical control using a chopper or shredder is not recommended however, because fragmentation may accelerate the spread of plants and aggravate the problem. Plant material that has been mechanically removed should be located clear of the water body to ensure it is not reintroduced during rain events or localised flooding. Biological control is based on the use of natural enemies of the weed to discourage its development and has been effective in managing large infestations of the water weed over extended periods.

Biologicals have been released in Queensland by the CSIRO, two weevil species and two moth species. Your local Land Protection Officer can provide information on the nearest collection site. Chemical spraying of infested areas is a swift and effective technique for managing water hyacinth but care should be exercised to ensure heavy infestations are not treated in one application as the treated water hyacinth can sink and pollute the water body with the rotting plant material. Herbicide applications usually require regular applications owing to the fact that once plants are removed, the increase in light penetration favours the germination of water hyacinth seeds and reinfestation.

These integrated management methods can be supported by some practical measures such as minimising the nutrient runoff into infested waterways and if possible lowering the water levels to reduce the area available to the plants. Water hyacinth will not develop in brackish water and is rapidly killed in salty water.

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