African Love Grass

Biology

African Love Grass or Weeping lovegrass (*Eragrostis curvula*) is a native of East Africa from Tanzania to Capetown. Introduced for soil stabilisation and as a pasture grass (which continues in the form of ‘Consol’ love grass). Common on sandy soils; capable of resisting drought and heavy grazing. It is an introduced grass of generally low palatability and great genetic variability. It has colonised many roadsides on lighter soils and can be an aggressive invader of disturbed or unhealthy native and sown pastures. Some varieties have been used as pasture species, for erosion control in waterways and as a nematode break in maize crops. Roadside slashing and burning on access roads to National Park areas has increased the density and distribution of this weed dramatically over the previous 10 years, and is the main dispersal method for this weed in the Tenterfield area.

Identification

African lovegrass is a perennial from sub-tropical environments, particularly areas with significant elevation. It grows from 0.5 m to 1.2 m tall; stems are slender or robust and erect or weeping in habit. The leaf is thin up to 0.3 cm wide, and grows to over 50 cm long. The leaf is variable in colour from bluish to green and curls at the tip when dry. As the plant grows it forms a solid tussock with each stem having a round, straw-coloured base. It has a dense mat of surface roots that anchor the plant very firmly. As the plant ages the inner stems of the tussock die off leaving dead un-productive stem and root material in the centre of the plant. Seeds are formed on a grey, much branched head. They are 0.5 to 1.5 mm in length and tightly packed into flattened, overlapping groups. The plant is mainly summer growing but it will go to seed at any time of the year after rain, providing temperatures are high enough. Autumn and spring growth is quite vigorous where moisture is available.

Impacts

African lovegrass is palatable to stock when young but it soon runs to seed and forms a tough closed tussock. The leaf of the plant is very fibrous and difficult for stock to digest once dry. In fact the leaf from some types is used in weaving and basket making in Africa. Unless African lovegrass is slashed or burnt the stem and leaf will not be utilised by stock except under heavy stocking rates or where there is no pasture choice. Being a prolific seeder the plant soon develops a large viable seed bank in the pasture making it difficult to eradicate and very competitive with all other pasture species. This weed is extremely aggressive, and has the ability to out compete many native grasses, particularly after fire or drought events when native flora species are suppressed. It seems unable to persist in drier climates west of the Darling Downs.

African lovegrass is declared a CLASS 4 NOXIOUS WEED in NSW.
Management and Control Techniques

Optimum time to treat

Established infestations are best treated with herbicide in February and March, preferably with wick application.

Control

Prevention of spread and seeding of the plant is by far the best policy. Mapping infestations on a regional basis will help prevention and target specific areas for eradication or management.

Vehicle and machinery hygiene is essential to reduce the spread of this weed. Vehicles or machinery that travel through infested areas should be thoroughly washed down before moving to areas where this weed is not present. Fostering the competitive ability of native species will provide competition for African Lovegrass and reduce re-invasion levels. Spot spraying is not selective and will remove all competition, resulting in quick re-invasion. Hand chipping can be used where infestations are small. Cooperative programs with neighbours and local councils should be encouraged to suppress and control this weed.

Replanting pastures may be an option in some cases but it can be costly and time consuming. Some landowners have reported success in controlling the plant by burning it, then heavily grazing the regrowth until a replacement pasture can be planted. However, movement of animals is also likely to spread the plant seeds in mud and wet coats. If you do decide that replanting the pasture is suitable for your situation the following strategy can be used.

Burn the pasture, cultivate and plant a sown pasture mix that is suitable for the area at the recommended time for pasture establishment. Follow-up chipping and spot control of new African lovegrass seedlings would then be required. An alternative to investigate could be increasing soil fertility and raising pH in acid soils. This may change conditions enough to allow other pastures to compete more vigorously with the plant.

Chipping African Love Grass with a hoe is a highly recommended option where there are few plants. The plants are difficult to remove completely and the disturbed area should be planted with a suitable pasture grass or re-colonisation from adjacent pasture encouraged.

Herbicides: Chemicals with the following active ingredients; atrazine, oxyfluorfen+ory and sulfometuron-m are registered to control African lovegrass in specific crops and particular situations. Ask your local agronomist to check the Infopest CD-ROM for current registrations. After controlling the plant with herbicides the remaining fibrous dead tussock takes a considerable time to break down in dry years, making it difficult to allow other plants to establish. If using chemicals on large established plants it may be best to burn the affected area first and then treat the new growth before the plant goes to seed.
Coolatai grass

Biology

Coolatai grass (*Hyparrhenia hirta*) has taken over large areas of north-west NSW and is still spreading. It continues to cause serious ecological damage within native vegetation areas including roadsides, national parks and the like where it displaces other desirable plant species. Coolatai grass is generally regarded as a weed because of its low digestibility and stock generally avoid Coolatai grass in favour of other grasses. However, the hardy nature of Coolatai grass has meant it being the only feed available in many lighter-soil areas during extreme drought conditions. Stock will survive on it, with assistance from feed supplements.

Identification

Coolatai grass has a distinctive seed head. The plant forms dense tussocks. Coolatai Grass (*Hyparrhenia hirta*) is a tall densely tufted perennial grass reaching up to 1.5 m in height. The leaves are rough to touch, grey-green and narrow, up to 30 cm long and 1-5 mm wide. The leaf ligule (at the base of the leaf blade where it joins the stem) is membranous and 2-3 mm long. The inflorescence is a long narrow panicle (clusters of flowers on a branching stem) 15-40 cm long. The spikelets (small flowers) are arranged in paired spikes along the panicle axis. The spikelets are hairy and arranged in pairs, one with a stalk and awnless, the other sessile (stalkless) and awned. The seed is about 2 mm long and is dispersed inside the hairy awned husk (http://www.environment.nsw.gov.au/pestsweeds/nswweeds.htm).

Impacts

Coolatai grass can take over new areas very quickly. It germinates and grows in a wide range of temperatures, produces vast quantities of seed and persists under heavy grazing. It dominates paddocks which are not intensively grazed or managed and although stock will graze fresh leaf growth they avoid older growth. Selective grazing by stock of more palatable grasses assists Coolatai grass to become dominant in pastures.

Coolatai Grass impacts on biodiversity by out competing and replacing native plants, preventing their regeneration and reducing available fauna habitat. It creates a fire hazard by producing large amounts of dry material resulting in a large fuel load. In a survey carried out in Kwiambal National Park, New South Wales the total number of species and number of native species was considerably lower in plots heavily infested with Coolatai Grass compared with plots relatively uninfested with the grass.
Areas of linear remnant vegetation such as road side reserves and railway lines are particularly prone to infestation due to their long edge to area ratio and their proximity the moving traffic. Indirectly, invasion of Coolatai Grass changes the nutrient and water cycle, and alters fire regimes. Coolatai Grass spreads by seeds which have hairy, awned husks that stick to clothing, animals and vehicles. Human activities such as slashing or traffic assist in spreading the grass, especially along roadsides. It is often dispersed by mowing and water movement. It is self pollinating and can produce many seeds from one original plant. When heavily grazed the basal stems form a dense, hard tuft that successfully protects it from close grazing by sheep and makes it resistant to fire (http://www.environment.nsw.gov.au/pestsweeds/nswweeds.htm).

As at Sep 2009, Coolatai grass is NOT a declared NOXIOUS WEED within the NIWAC region.

Management and Control Techniques

Optimum time to treat

Treatment with herbicides as a complete overall foliar spray is best carried out in spring and summer when plants are actively growing with good soil moisture.

Control

Every effort should be made to prevent Coolatai grass from becoming established in new areas and regular follow-up is essential to prevent further establishment. Either manual removal (small areas only) or herbicide application is advisable before plants have a chance to produce seed.

A single dose of herbicide may not kill mature Coolatai Grass tussocks, but combining physical and chemical treatment can be effective.

The spread of the grass along roadsides could be reduced by modifying maintenance activities. For example, grass trash and seed could be removed from slashers and graders before they move from infested to uninfested areas or slashing could occur before the grass flowers.

It appears unlikely that grazing could be used as a management strategy to completely remove the grass from pasture and heavily infested properties will need to learn to manage the grass to achieve adequate levels of production. Where it has not yet invaded intensive effort should be undertaken to prevent it from doing so. Intensive grazing will reduce the biomass of the grass but will not control the infestation and may disadvantage native species.

Anecdotal evidence suggests that fire may encourage the spread of the plant. Fire is known to reduce the bulk of grassy weeds but it can also increase their rate of invasion and density.

Herbicides are useful to spot remove infestations of grassy weeds before seed set but Coolatai Grass is resistant to many of them. Permits have been issued for the use of Roundup 360® and/or Taskforce® for treatment of Coolatai grass. See PER7883 for hand spraying, PER9430 for broadacre application.

Sources:
Chilean Needle Grass

Biology

Chilean needle grass (*Nassella neesiana*) is a native of South America. It builds up a large and persistent seed bank in the soil, due to its abundant panicle, basal and stem seeds.

Identification

Chilean needle grass is a perennial tussock-forming grass up to 1.5m when in seed. It is very similar in appearance to native spear grasses (*Austrostipa* species) tall fescue and Danthonia. The adult plant is long-lived and very hardy. Its leaves are flat to somewhat inrolled, to 30 cm long and 5 mm wide, strongly ribbed on their upper surface, sometimes sparsely hairy, and with edges that are rough to touch (particularly in one direction) due to marginal hairs. At the junction of the leaf blade and leaf sheaf is a smooth membranous ligule up to 3 mm long (sometimes almost absent on lower leaves), which extends across the leaf and is bordered by two small tufts of erect hairs either side which are easily seen when the leaf is pulled away from the stem.

Chilean Needle Grass is unusual in producing two types of seeds: besides the normal flower seeds produced in a paniculate seed head, it produces hidden seeds in the nodes (swellings along the stems that give rise to leaves) and bases of the flowering stems. These ‘stem seeds’ are self-fertilised and account for about one-quarter of total seed production. They enable the plant to reproduce despite grazing, slashing and fire. The flowering seed heads are loosely branched, open panicles to 40 cm long with a distinctive purplish colour. The seeds which are up to 1 cm long have a sharp hard point at the base with silky hairs. The 4-9 cm long awn is twisted towards the base and often bent two or three times. The awns often form a tangled mass at maturity. At the junction of the awn and the lemma, there is a characteristic raised crown 1 to 1.5 mm long with small teeth. This is known as a corona and it encircles the base of the awn.

Seed heads emerge spring to late summer and, when mature, have a distinctive purplish colour ([http://www.weeds.gov.au/cgi-bin/weeddetails.pl?taxon_id=67699](http://www.weeds.gov.au/cgi-bin/weeddetails.pl?taxon_id=67699)).
Impact

Chilean needle grass is a highly invasive weed and has serious impact on agricultural and native ecosystems as well as riparian vegetation. The panicle seed readily attaches to stock, particularly sheep, and can cause injury by burrowing into the skin and sometimes muscle. Its presence in wool reduces quality and can be a major cause of downgrading. Rehabilitation of infested land is very difficult. The potential for spread and its likely economic and environmental impacts have led to the declaration of Chilean needle grass as a Weed of National Significance (WoNS).

Chilean needle grass is a declared NOXIOUS WEED within parts of the NIWAC region.

Management and Control Options

Optimum time to treat

Chemical treatment must be carried out from autumn to flowering, ensuring plants do not mature and produce seed.

Control

Prevent movement of livestock and machinery from infested areas during seeding. Good hygiene can be effective in preventing human assisted spread of Chilean needle grass. Cleaning of vehicles, machinery, equipment and other material are very important in preventing further spread, as is controlling the movement of livestock from infested to clean areas. Slashers and mowers can transport seed from infested to non infested sites. Machinery modifications which restrict the build up of seed on slashers and mowers, including guards and fans, assist in preventing the spread of the weed particularly along roadsides. Feed stock in controlled areas to minimise the risk of seed spread and to limit the area requiring control.

Chilean needle grass, like many weeds, is symptomatic of prolonged grazing, which tends to eliminate palatable plant species and allow unpalatable species to multiply without restriction. Sustainable land management practices results in systems that are naturally more resilient to weed infestation.

Research suggests that if the grass is detected early and acted upon with a great deal of persistence over several years, it is likely it can be controlled and eradication achieved. Unfortunately, Chilean needle grass is difficult to detect in the field and some degree of skill is required to differentiate it from other grasses, particularly when not in flower. Report suspected infestations to your local Government pest management officer or your local Department of Primary Industries and Fisheries Land Protection Officer who will advise on action to take.
Small infestations should be manually removed before they flower and set seed, and destroyed by incineration. Flowering or seeding plants should be bagged on removal to avoid spreading seed. Slashing or mowing before the grass sets seed will remove the bulk of the seed but will not remove basal seeds.

Always read the label carefully before using any herbicide. All herbicides must be applied strictly according to the directions on the label. Chemical: apply Taskforce® no later than 8-10 weeks before flowering is anticipated. Applications of Roundup 360® in the NIWAC region are more effective in autumn months compared to spring applications.

For best results, combine herbicide application with physical removal, crop rotation, pasture sowing and grazing management (short duration, high intensity). Mowing, slashing, cultivation, mulching and fire can also be implemented to assist in an integrated control program.

Honey Locust

Biology

Honey locust (*Gleditsia triacanthos*) was introduced into Australia from America in the late 1800s as a fodder and ornamental tree. The trees are now a serious problem particularly in riparian zones.

Identification

Honey locust is a deciduous, leguminous tree growing to 20 m tall. From spring to autumn it bears prolific green leaves (10 cm long), with about twelve opposite paired leaflets per leaf. In October-November it bears creamy, yellow hanging flower stalks (10 cm long) that develop into 20–30 cm long brown pods. Some varieties have separate male and female plants, while other varieties are bisexual. The plant seeds prolifically every 1–2 years and the pods are relished by stock. The trunk and limbs of ‘wild’ trees bear very large crucifix like tri-pointed spines that can grow more than 50 mm.

Impact

Honey locust is an invasive tree. It thrives in riparian areas, forming dense monocultures, restricting access to water, and creating safe harbour for certain feral animals. The spread of weeds threatens the sustainability of agriculture and other land uses. Weeds also devastate native plants and animals. The seeds are efficiently spread by animals and, more importantly, floodwaters. The seed pods become small boats as they float downstream for kilometres. The plant’s long, strong spines can inflict serious injuries and infections to humans and livestock. They can also cause damage to tractor, quad bike and other vehicle tyres, restricting vehicle movement near infestations. Even when the plant has died, spines can continue to inflict injury.

Honey locust is NOT a declared NOXIOUS WEED within the NIWAC region – as at September 2009. This may change.
Management and Control Options

Optimum time to treat

Spring-summer when plants are actively growing. Qld DPI have done a lot of work on this plant and suggest honey locust trees can be successfully controlled with basal bark treatment with Starane® in both actively-growing and dormant stages.

Control

The best approach is usually to combine different control methods Manual removal may be appropriate for small plants but unless roots are removed there will be regrowth.

Continual grazing suppresses seedlings but can also assist in spreading seeds into new areas. Grazing can be a useful follow-up control method after herbicide treatment to control seedlings and regrowth, providing the plants do not bear seed pods. For the control of dense infestations on grazing land, burning followed by spot spraying is an economical control method.

Bulldozing breaks plants at or above ground level. Once broken, honey locust will vigorously produce regrowth from broken bases and roots. Follow-up with some other form of control such as cultivation or herbicide is necessary.

On arable land, dozing following by deep ploughing can control dense infestations, only if followed by regular cropping and/or spot spraying of regrowth. If cultivation is abandoned, reseeding from nearby trees can be a problem.

Before using any herbicide always read the label carefully. All herbicides must be applied strictly in accordance with the directions on the label. Herbicides include basal bark/cut stump application of Access®/diesel or Starane®/diesel, cut stump/stem injection with Vigilant®, folia spray with Starane® with various rates according to plant size. Refer to label directions. NB Starane®/diesel basal bark treatment seems to be the most favoured.

Once a honey locust tree has been killed by herbicides it is quickly invaded by borers. By the time the tree falls, the borers have reduced it to a shell and it will shatter. Blockages of watercourses are of minimal concern. The thorns do not break down as quickly and remain a danger to humans and other animals walking through the area where the trees were.

As safety is a concern, removal of the dead trees will help to eliminate these problems.

Blackberry

Biology

Blackberry was introduced to Australia around the time of European settlement as a source of edible fruit and as a hedging plant, blackberry quickly adapted to the cool temperate areas of Australia.

Identification

An erect shrub to 2m high. This woody perennial shrub can grow singularly but usually in dense thickets, and consists of arched, reddish purple stems up to 7 m long, with numerous hooked thorns. Leaves consist of 3 to 5 separate leaflets, are dark green on the upper side, whitish underneath, and usually bear hooked thorns on the leaf stalks. Leaves are usually shed in winter. Flowers are 2 cm to 3 cm in diameter, white or pink in colour and are formed in clusters at the ends of the branches. Fruit change colour from green to red to black as it ripens, are succulent and edible, and consist of numerous fleshy segments, each containing one seed.

Impact

This weed forms a dense canopy and thus few plants can successfully compete. The weed invades native bushland, reduces the carrying capacity of grazing land and also provides ideal habitat for rabbits and foxes. Blackberries usually invade disturbed areas, particularly where vegetation has been cleared. Birds and animals, such as foxes, are attracted to the fruits and are responsible for spreading the seeds over wide areas. Seeds are also distributed by water along creeks, gullies and rivers. The stems or canes are able to send out roots where they touch the ground forming daughter plants and increasing the size of the infestation.

Lateral roots can produce suckers and new plants can grow from root or cane cuttings. Blackberry can severely restrict access in agricultural, conservation and recreational areas. Sheep become entangled in the long canes when foraging for pasture and often die as a result. Blackberry is listed as a Weed of National Significance (WoNS).

Blackberry is a declared NOXIOUS WEED within the NIWAC region.
Management and Control Options

Optimum time to treat

Treatment with herbicides should only be carried out post-flowering when plants are actively growing with good soil moisture and before the onset of winter conditions.

Control

Maintenance of dense cover or pasture will prevent blackberry seedlings from establishing. For established plants, chemical treatment is the most practical control method; however, for isolated plants, physical removal of the crown and root system by mattocking will be effective.

Pull out small plants and ensure proper disposal by burning or putting into black plastic bags to rot down. Slashing, cultivation and burning where appropriate followed by planting of competitive pastures, or replanting with native vegetation will control blackberry.

A rust fungus can attack some blackberry species. The fungus will not kill the weed, but will cause defoliation, reducing the plant’s aggressiveness and rate of spread. The rust alone cannot be relied upon to give adequate levels of control.

All herbicides must be applied strictly in accordance with the directions on the label. Herbicide application is ideal as a follow up to mechanical control (up to 75% of the plant mass may be dead canes) as this will reduce herbicide use and improve plant uptake of herbicide. Herbicides include complete foliar spray with Grazon®, Brushoff®, or Roundup 360®. Roundup bioactive® can be used on plants within waterways. Refer to label directions. Follow-up treatments are usually required.

Lippia

Biology

Lippia (*Phyla canescens*) infests 5,300,000 hectares of the Murray-Darling Basin at an annual cost of $1.8 billion to the environment, and conservatively costs grazing industries $38 million per annum in lost production. Lippia is generally considered an invasive weed of floodplains. However, if seasonal conditions are suitable, lippia can adapt to almost any area.

Identification

Lippia is a broadleaf perennial herb that grows in summer. It forms a solid mat-like ground cover with runners that take root at nodes. Leaves are 1–3 cm long and occur in pairs at stem nodes. They have a blunt serrated edge towards the tip and taper to a short stem. Stems and leaves are greyish-green (canescent) in colour.

Small tubular flowers appear between spring and autumn when soil moisture is favourable, and can be white, cream, pinkish or pale lilac. The flowers occur as clusters forming a round flower head when mature. Rounded fruits are 1–1.5 mm in diameter and, when mature, split to release two flat, brown, oval seeds. Lippia is found in the more temperate regions of Australia, particularly in floodplain environments, and prefers heavy clay soils.

Impact

The primary threat from lippia lies in its direct impact on groundcover in floodplain communities. The spread of lippia has significantly impacted on and continues to threaten biodiversity throughout the Murray-Darling Basin.

Lippia is able to grow from fragments that break off and take root in moist soil. It is primarily dispersed by floodwaters and can also spread via seed, vehicles, machinery, birds and livestock.

The spread of lippia appears to be clearly related to flood events, and a period of significant rainfall and flooding will likely result in an ‘explosion’ in a lippia population. Lippia is also capable of spreading on high ground and in other areas not affected by floodwaters.

Lippia can tolerate drought and frost, and can survive long periods of inundation. It readily establishes on bare ground and has the ability to take over large areas of land along waterways and adjacent higher ground.

Lippia is a declared NOXIOUS WEED within parts of the NIWAC area.
Management and Control Options

Optimum time to treat

Herbicides should be used as part of an overall management plan that includes vigorous pastures and good grazing management. Apply when lippia is actively growing, preferably early flowering with good soil moisture.

Control

The use of only one control method is usually ineffective. Therefore, long-term control is best achieved by using a combination of herbicides, mechanical control and pasture management.

Short-term control of lippia can be achieved where infestations can be ploughed or harrowed. This method is not practical if lippia is growing in riparian zones (such as creek banks) due to the high risk of erosion and soil loss.

Lippia is not usually a problem in cropping areas as it can be readily ploughed into the soil. However, machinery easily spreads lippia, so it is recommended that machinery working in lippia-infested areas is washed down before leaving that area.

When lippia is actively growing and soil moisture levels are good, herbicide can be used in conjunction with mechanical control to give better results.

As lippia is a broadleaf weed that occurs in pasture situations, some herbicides can be used to reduce lippia without harming competitive grasses.

There are limited herbicides registered for use on lippia, but there is no herbicide currently available that will effectively suppress the growth of lippia in the long term. Due to its ability to rapidly recover and spread, multiple herbicide applications within a season have been shown to give better lippia suppression than single applications. Only use Roundup Biactive or equivalent formulations within 20m of a waterway. Agricrop Lantana 600 (dichlorprop) is the only herbicide registered for lippia control in pasture and non-crop areas. Permits are in place for the use of 2,4-D amine for lippia control in these areas in both NSW and Qld. Extreme care should be taken when using 2,4-D near cotton. Refer to label directions.

Chemical control is not suitable in riparian areas due to the risk of polluting waterways. Also, herbicides should not be applied immediately after rain or if heavy rain is forecast.

Productive pastures are essential for long-term lippia control. Healthy and competitive pastures can suppress lippia re-invasion, while heavily grazed pastures will encourage the weed to re-establish.

In degraded pastures, herbicide control may assist in suppressing the growth of lippia. However, this will only provide short-term benefits, as lippia will re-invade the pasture when conditions improve. To help prevent the re-establishment of lippia in degraded pastures, sowing with perennial pasture species is required. Recommended introduced grasses are floren bluegrass, bambatsi grass and purple pigeon grass. A recommended native species is Queensland bluegrass. Re-sown pastures should be maintained and monitored to ensure that any lippia regrowth is suppressed. As lippia may release allelopathic toxins that can prevent the germination and establishment of other pasture species, it is recommended to allow a lippia-free fallow period of at least two months prior to sowing, to allow time for the toxins to disperse.
Parthenium

Biology

Parthenium weed (*Parthenium hysterophorus*) is regarded as one of New South Wales’ most serious weed threats. It is native to the Caribbean region and is thought to have been introduced to Australia on machinery from US during WW2 and as a contaminant of imported pasture seed during the 1950s. Parthenium weed is a Weed of National Significance (WoNS).

Identification

Very nondescript and difficult plant to spot until it comes into flower. The main features are randomly grouped white, 5-lobed flower heads, each 4-6mm in diameter and the stems contain vertical grooves in light and dark shades of green. Its leaves are pale green, deeply lobed and covered with fine soft hairs. It’s an annual plant with a deep taproot and an erect main stem that becomes woody with age. It grows to an average height of around 80cm and may eventually reach a height of 2m. Small creamy white flowers occur on the tips of the numerous stems. Each flower contains four to five black seeds that are wedge-shaped, two millimetres long with two thin, white scales. The plant is sometimes mistaken for bishop’s weed or hemlock because of its white flowers (and vice-versa). Parthenium weed normally germinates in spring and early summer, produces flowers and seed throughout its life and dies around late autumn. However, with suitable conditions (rain, available moisture, mild temperatures), parthenium weed can grow and produce flowers at any time of the year. In summer, plants can flower and set seed within four weeks of germination, particularly if stressed.

Impact

Parthenium weed is a vigorous species that colonises weak pastures with sparse ground cover. It will readily colonise disturbed, bare areas along roadsides and heavily stocked areas around yards and watering points. Parthenium weed can also colonise brigalow, gidgee and softwood scrub soils. Its presence reduces the reliability of improved pasture establishment and reduces pasture production potential. Parthenium weed seed is transported from infested areas in hay, grain, harvesting machinery, livestock transport vehicles, harvesting support and tourist vehicles. New plants are difficult to detect until in flower, and there is only a small window of opportunity to eradicate the plant before it seeds. Once established, it creates a seed bank in the soil that can last more than 15 years. Parthenium weed contains powerful allergens that cause a range of human health problems including asthma and severe contact dermatitis in sensitised individuals. It taints meat and milk in exposed grazing animals.
Parthenium weed is a CLASS 1 NOTIFIABLE NOXIOUS WEED in NSW. Any findings must be reported to the local Council within 3 days of detection. If you suspect a plant could be Parthenium weed, note its location and report it to Industry and Investment NSW (formerly NSW DPI) or your local council Weeds Officer for positive identification.

Management and Control Options

Anyone who suspects they have found Parthenium weed SHOULD NOT attempt to control it themselves. If it is parthenium weed, Council and DPI staff will carry out the control work. Initial control cost of notified parthenium weed infestations is covered by a contingency fund allocated by the Minister for Agriculture. Location of parthenium weed outbreaks on private property is kept strictly confidential.

Vehicles and implements passing through parthenium weed infested areas should be washed down with water. Particular care should be taken with earthmoving machinery and harvesting equipment. The wash down procedure should be confined to one area, so that plants that establish from dislodged seed can be destroyed before they set seed.

Extreme caution should be taken when moving cattle from infested to clean areas. Avoid movement during wet periods as cattle readily transport seed in muddy soil. On arrival, cattle should be held in yards or small paddocks until seed has dropped from their coats and tails prior to their release into large paddocks. Infestations around yards can be easily spotted and controlled whereas infestations can develop unnoticed in large paddocks.

Particular care should be taken when purchasing seed, hay and other fodder materials. Always keep a close watch on areas where hay has been fed out for the emergence of Parthenium or other weeds.

Property hygiene is important. Owners of clean properties should ensure that visitors from infested areas do not drive through their properties. If your property has Parthenium weed on it, ensure that it is not spread beyond the boundary or further within the property.

Grazing management is the most useful method of controlling large-scale Parthenium weed infestations. Maintain pastures in good condition with high levels of ground and grass crown cover. This may require rehabilitation of poor pastures, followed by a sound grazing maintenance program.

Poor establishment of sown pastures can allow Parthenium weed colonisation. Aerial seeding prior to scrub pulling is normally beneficial. High grazing pressure caused by drought or high stock numbers decreases the vigour and competitiveness of pastures and allows the entry and spread of Parthenium weed. Maintenance of correct stock numbers is most important in controlling Parthenium weed. In situations of serious infestation, pasture spelling is essential for rehabilitation. Total spelling is much more effective than simply reducing the stocking rate. However, overgrazing of the remainder of the property must be avoided. The most appropriate time for pasture spelling is the spring–summer growing period, with the first 6–8 weeks being particularly important.
If the condition of perennial grasses (native or sown) is low, spelling for the entire growing season may be required or introduced grasses may need to be re-sown.

Grazing during winter should not increase the parthenium weed risk. Most tropical grasses are dormant and can tolerate moderate grazing during this period. However, parthenium weed may germinate and grow at this time.

One of the main problems in controlling parthenium weed is the large paddock size and the variability of country within paddocks. The resulting uneven grazing pressures encourage parthenium weed to colonise the heavily grazed country. Ideally, similar land types should be fenced as single units. Fencing can be used to great effect to break up large paddocks, allowing more flexible management.

Paterson's curse

Biology

Paterson’s curse (*Echium plantagineum*) is a winter annual herb, germinating following summer and autumn rains. Plants grow vegetatively as a rosette during autumn and winter. Flowering stems are produced in early spring, and seed in late spring to early summer.

Identification

Paterson’s Curse is an annual herb which is commonly 60 cm high but can grow up to 150 cm. It has several erect stems that arise from a stout taproot and large rosette of leaves at the base of the plant. The stems and leaves are covered in hairs that can cause skin irritation if touched. The rosette leaves grow up to 30 cm long and up to 8 cm wide, have a stalk, are oval to oblong in shape, and green to light green in colour. The stem leaves are narrower and smaller than the rosette leaves and are stalkless or stem-clasping.

The trumpet-shaped flowers, up to 2-3 cm long, are pink in the bud and purple to blue when opened; occasionally white and pink flowers are seen. Each flower has five stamens, two of which protrude out of the flower tube whereas the other three are included inside. The seeds are dark brown to grey, 2-3 mm long and rough on the outside. Up to four seeds are produced from each flower. Seedlings of Paterson’s Curse have large, rounded, hairy cotyledons that are shortly stalked. The first true leaves of the seedlings are oval in outline, have a prominent mid-rib and are covered in long hairs. Flowers generally appear from July to November. The plant has a stout taproot many lateral roots.

Impact

Paterson’s Curse can form very extensive, dense, persistent populations in disturbed areas. It is a very competitive and dominant species, especially in areas where grazing pressure is low and soil fertility is high. Its high early growth rate, stout taproot and large smothering rosette leaves enable it to compete vigorously with seedlings of native and useful pasture species. Early germination, coupled with a fast-growing root system, and drought resistant properties of seedlings contribute to the competitive success of this species.
It reduces pasture productivity and is toxic to livestock. Paterson’s curse contains pyrrolizidine alkaloids. These alkaloids cause chronic liver damage and mortality, especially if substantial amounts are eaten over prolonged periods. Human and livestock contact with the abrasive hairs on the plant can cause dermatitis, itching and inflammation. It can also trigger hayfever. Nationwide it has been estimated that 33 million ha of land is infested with Paterson’s Curse and that the total cost of Paterson’s Curse to Australia’s sheep and cattle producers is estimated at $250 million per year. It is a weed of potential national significance. ([http://www.environment.nsw.gov.au/pestsweeds/nswweeds.htm](http://www.environment.nsw.gov.au/pestsweeds/nswweeds.htm))

Paterson’s Curse is a declared NOXIOUS WEED within the NIWAC region.

Management and Control Options

**Optimum time to treat**

Winter months.

**Control**

Paterson’s curse spreads only through the movement of seeds, therefore methods which prevent seed moving to uninfested areas should be employed.

Physical control methods, such as hand hoeing and pulling are suitable for isolated plants. Flowering plants should be destroyed (e.g. by burning) as the seeds will continue to mature even after the plant has been cut, pulled or hoed. Grazing, particularly by sheep, is effective when managed correctly. Cultivation can also control Paterson’s Curse. The use of competitive crops and pastures will help prevent infestation.

Paterson’s Curse is susceptible to a number of herbicides including include 2,4-D amine, Roundup 360®, Brushoff®, MCPA and Dicamba®. Refer to label directions. Herbicides should be applied at the seedling or rosette stage and when the plant is actively growing to be most effective.

Paterson’s Curse has been recognised as a target for biological control through a cross-jurisdictional government process. This allows activities to be undertaken to develop effective biological controls. A number of insects have been released since the first attempt at biological control in 1980 in an effort to provide long term control, particularly of large infestations.

Harrisia Cactus

Biology

Harrisia cactus (*Harrisia martinii*) is a native of the Americas, brought into Australia for its appeal as a garden plant. Harrisia developed into a serious pest problem in parts of central Queensland, and is now prevalent in the Boggabilla-Yetman areas of New South Wales.

Identification

Harrisia cactus is a perennial. The spiny fleshy stems are jointed and form tangled mats about half a metre high. Many branches often lay flat and take root where they touch the ground. Each section is ribbed lengthwise with six ribs; each rib has low, thick, triangular humps at regular intervals. These humps have cushions of grey felty hairs, three to five short spines lying flat, and one to three erect, stiff, very sharp spines 2.5−3 cm long.

The large flowers open at night. Flowers are pink, funnel shaped with a tinge of white. These grow singly near the ends of the stems on a scaly but spineless slender grey/green tube 12−15 cm long. Round red fruits 4−5 cm across have scattered bumps with hairs and spines. Numerous small black seeds are embedded in the white, juicy pulp of the fruit which splits open when ripe. Harrisia cactus roots are of two types. Shallow feeding roots up to 3 cm thick and 30 cm−2 m long grow mostly horizontally off a crown, up to 15 cm below ground level. Swollen tuberous storage roots descend to a depth of 15−60 cm.

Impact

Harrisia cactus can form thick infestations, blocking out grazing access and reducing stock carrying capacity. Harrisia cactus is spread by seed. A single plant can produce more than 50 fruit per year. Each fruit contains about 800 seeds encased in a sweet, sugary substance attractive to birds, emus, pigs, goannas and ants that aid its dispersal. Harrisia cactus can also reproduce by stem sections taking root. A deep, underground, tuberous root system allows the plant to survive catastrophes which may kill the above ground parts. Harrisia cactus will choke out other pasture species when left unchecked. The spines are a problem for stock management, interfering with mustering and stock movement. Any broken off portions of the plant will take root and grow.

Harrisia cactus is a declared NOXIOUS WEED within the NIWAC region.
Management and Control Options

Optimum time to treat

When plants are actively growing, generally any time of year except mid-winter.

Control

Two introduced insects have become established in the field: a stem boring longicorn beetle; Alcidion cereicola and a mealy bug; Hypogeococcus festerianus. The stem-boring beetle only attacks older woody stems. Populations of Alcidion cereicola have declined with the reduction in the cactus in recent years. The mealy bug aggregates and feeds in the tips of stems and buds, where it limits growth and causes distortion. This results in the knotting of the stem. The plant’s response is to utilise energy reserves within the tuber system to produce new growth. Eventually the plant dies, as it is unable to support the high continuous energy demands. Dry weather reduces the effectiveness of the mealy bug. When dry the plant’s tuber system becomes dormant. Consequently, mealy bug damage does not result in new growth and the energy reserves within the plant are not affected. Instead the bug may damage all vegetative parts and eventually die out. The tuber will remain dormant until adequate moisture returns when it will reshoot.

Mealy bug disperses naturally via wind although landholder assistance is necessary for its continuous spread, particularly between patches. The bug is manually spread by cutting infected stems and placing them into healthy plants. The best pieces for starting new colonies are large knobs of twisted and distorted cactus that contain many mealy bugs well protected inside knots. Stem tips covered by white, woolly masses of bug are also good. To collect the bug cut infected stems approximately 15 cm from the distorted knob and place segments in green, plump sections of the healthy plant. Avoid placing mealy bug in stressed or dried out stems. Small cactus plants require at least one large knot, with larger plants requiring three knots per plant. Where possible, landholders should infest every cactus clump as this ensures a rapid reduction in growth and fruiting potential. When cactus infestations are light, chemical control may be a preferable option. Cut pieces can be transported in boxes or open vehicles. They are not delicate but are better kept in the shade. Avoid keeping them in large heaps, direct sunlight, under tarpaulins or in closed containers for long periods. Such conditions will promote rotting of the stems, leading to poor results or failures. Ideally, stems should be put out within 3 days and a maximum of 5 days.

Best results come by infesting new areas during spring and early summer, from September to December. Maximum growth and spreading occurs in the summer months of December to February. During the drier and colder months of April to August the mealy bug does not die, but little growth and multiplication occurs. Introduction of mealy bug during autumn and winter will not be lost but little effect is seen until the following summer.

Mealy bugs are generally more active and effective on Harrisia Cactus growing underneath shrubs and trees. Results will be seen more quickly in these areas than in cactus growing in the open. Best results are obtained when infesting plants that have actively growing new shoots. During wet summers the growing points of stems will begin to curl after about six weeks. By the end of the first summer, damage (severe twisting) will be widespread in infested plants. If the initial infestation was sufficiently heavy, no fruit or growth will occur during the second year, and the cactus will begin to die during the third year.
Seedlings and regrowth shoots will continue to be present but by the end of the fourth year there should be very little cactus left. In areas where temperatures are lower, the mealy bug still provides control but the process takes longer. Also the mealy bug does better on cactus in the open rather than in the shade as temperatures are higher in the open.

If you cannot obtain mealy bugs from your own property or neighbour contact the vegetation management/weed control/environmental staff at your local government.

Appropriate herbicides include Brushoff®, Grazon® (PER10544) Acess/ diesel, Lantana 600®. Refer to label directions. All herbicides must be applied strictly in accordance with the directions on the label.

Dig out plants completely and burn. Ensure that all tubers that can grow are removed and destroyed. Ploughing is not considered an effective means of control unless followed by annual cropping.

Mother of Millions

Biology

Mother-of-millions (Bryophyllum delagoense and hybrids) is a plant from Madagascar. The beautiful flowers have made it a popular garden plant in eastern Australia. It is highly toxic to stock.

Identification

Mother-of-millions is a hardy, drought-resistant succulent. The plants grow up to 1m. All species form tall flower spikes in winter with clusters of bell shaped flowers. Each species has a distinctive leaf-shape, but all produce small plantlets along the edges of the leaves. These plantlets drop readily, develop roots, and establish quickly to form a new colony. Bryophyllum delagoense has grey-brown fleshy, tubular-like leaves with up to seven projections at the tip of each leaf. The flowers are orange-red and occur in a cluster at the top of a single stem. Seeds can germinate for some years. The plants establish well in leaf litter or other debris on shallow soils in shady woodlands, and often grow on roadsides, along fence lines and around old rubbish dumps. They can spread from these areas, especially in flood and establish if pastures are run down. The plant flowers in the winter.

Impact

The plant’s ability to reproduce in such large numbers and to withstand droughts explains why it has escaped from numerous gardens and rubbish tips to become a serious problem in many rural areas. Mother-of-millions particularly at flowering can be very poisonous. Since the plant flowers from May to October, during the dryer months of the year, the scarcity of feed may cause cattle to consume lethal amounts of mother-of-millions.

Mother of Millions is a declared NOXIOUS WEED within the NIWAC region.
Management and Control Options

Optimum time to treat
Winter when the plants are in flower and easier to find. Treating infestations at this time of year also has the benefit of preventing new seeds from developing on common mother-of-millions.

Control
The best form of weed control is prevention. Always treat weed infestations when small; do not allow weeds to establish. Weed control is not cheap, but it is cheaper now than next year, or the year after.

Keep stock, especially hungry stock, away from infested areas until the plants are controlled.

Permanent control of mother-of-millions infested areas is best ensured by establishing more desirable plants in that location to compete successfully with future mother-of-millions seedlings and plantlets. This can be achieved best by soil preparation, replanting, fertilizing and using the area more productively than before control of mother-of-millions. Ensure scattered infestations and small dumping areas on properties are regularly checked and cleaned up. Day-to-day hygiene management will help prevent establishment of these weeds.

Co-operative control upstream and downstream of problem areas will help prevent re infestation from other areas.

The South African citrus thrip damages the outer tissue of the mother-of-millions plant and also lays its eggs under this outer tissue. Where high populations of thrips exist they reduce the number of viable plantlets and flowers forming on mother-of-millions. The thrips populations vary from year to year according to mother–of-millions populations and climate. The South African citrus thrips should not be seen as a long term control strategy, only a control option to complement other techniques such as chemical treatment and burning.

For small areas, pull up plants by hand; stack on a wood heap, and burn. Alternatively bag and dump in bin whose contents are buried at your council’s refuse tip rather than recycling into mulch.

When suitable, e.g. after grading firebreaks, burn infestations along with the accompanying debris on which mother-of-millions plants thrive. This is the most economical control, encourages grass competition and lessens the problem for years requiring only spot spraying with selective herbicides.

Herbicides recommended for control include 2,4-D amine, Starane®, Grazon®, Brushoff® (permit PER7156 – renewal pending). Refer to label directions. All herbicides must be applied strictly in accordance with the directions on the label. Where addition of wetting agent is recommended always use a commercial wetting agent or surfactant.

St Johns Wort

Biology

St John’s wort (Hypericum perforatum) threatens all grazing properties in northern New South Wales. One plant of St John’s Wort can produce 30,000 seeds. The (sticky) seeds are spread by animals. The seeds can remain viable in the ground for more than twenty years. It is so important, therefore, that all infestations are regularly monitored to locate any flowering plants. These plants need to be treated before seed set. Every plant untreated has the potential to produce hundreds of new plants.

Identification

St John’s Wort is an erect, perennial herb that grows to about 1.2 m in height. The root system consists of a vertically-penetrating tap root and lateral roots that produce buds from which new crowns develop. The stems are often reddish in colour and bear two opposite ridges that run along the stems. The leaves are sessile (without stalks) and arranged in opposite pairs along the stem. Small translucent hypericum oil glands, which are especially distinctive when held up to the light, are dotted over the surface of the leaves. The flowers are 1-2 cm in diameter and made up of five, bright yellow petals. Small, black glands may be found scattered along the edges of the petals. The fruit is a sticky three-celled capsule that splits open from the top when mature. The fruits contain numerous, small, golden-brown seeds (1 mm long and 0.5 mm wide).

Impact

St John’s Wort reproduces from crowns, lateral roots and seed. Seed heads can adhere to the coats of livestock and seeds remain viable after being consumed by livestock. Wind may transport the seed over short distances. Water currents also spread the seed, especially where plants are in areas prone to surface run-off or in riparian habitats. Cultivation may spread the plant by scattering the root fragments. Plants also spread by the production of lateral roots which can form new crowns.
St John’s Wort contains hypericin, a photodynamic compound that reacts to light, causing photosensitization (i.e. skin irritation). Hypericin also has negative effects on animal behaviour and organ function. Although St John’s Wort is usually avoided by grazing animals, they will consume it when other feed is scarce. Ingestion can cause weight loss, failure to gain weight, reduced wool and milk production, and reduced reproductive performance. Some livestock will die because of grazing St John’s Wort. Horses are more susceptible than other forms of livestock.

In pastures, St John’s Wort displaces useful vegetation and, if left to establish, can eliminate almost all other plants. Large and dense infestations have led to the abandonment of formerly productive areas in New South Wales. It is not as problematic on arable land as continued cultivation does not allow for conditions conducive to invasion of the weed.

In summer, the masses of dry stems that are left standing can become a fire hazard. St John’s Wort also invades native habitats. In these situations, its impacts are largely unknown, although it is assumed that the species would have a significant impact on native flora and fauna.

Preparations containing St John’s Wort are used medicinally, although these can affect the way some prescription medicines work.

St John’s Wort is a weed of potential national significance and is a declared NOXIOUS WEED within the NIWAC region.

Management and Control Options

**Optimum time to treat**

From the first flowering (around September), right through until March. Plants are hard to see unless they are in flower.

**Control**

St John’s Wort is sensitive to competition, particularly when plants are young. Good pasture management, which favours the growth of desirable perennial species, can have significant impact on the success of St John’s Wort. Converting an infested area to a well-worked cultivation paddock is probably the only effective way to eradicate St John’s Wort. Overstocking encourages the weed as livestock tend to prefer other species, reducing competition.

Biological control of St John’s Wort in Australia has a long history, commencing over 80 years ago. Six biological control agents have become established in Australia. Two of these, a chrysolina leaf beetle (Chrysolina quadrigemina) and the St John’s Wort Mite (Aculus hyperici), have shown potential to contribute to the control of St John’s Wort (Briese 1997).

Herbicides can be used in the management of St John’s Wort including Grazon®, Starane®, Roundup 360 ® (suitable for single plants or small infestations only), 2,4-D ester, Brushoff® + very light rate of Roundup 360®. Refer to label directions. If plants have seeded, follow-up treatment will be required for many years.
Thistles

Biology

All thistles are members of the Asteraceae family. These images show some of the more common species in inland NSW. Problem thistles have all been introduced into Australia and generally serve no useful purpose.

Identification

The main challenge when identifying thistles is not deciding what a thistle is but rather which particular thistle. All thistles have spines on their stems, leaves, flowers or all three. They can be stemless thistles which never grow much above 100mm or, for example, black thistles which can reach 180cm or more.

Impact

Thistles prefer to colonise bare ground. Under suitable conditions most thistles form thick infestations. They monopolise water and nutrients, reducing yield. They can contaminate grain and wool products along with causing physical damage to humans, livestock and dogs.

Five thistle species are declared CLASS 5 NOXIOUS WEEDS for the whole of NSW:

- Soldier thistle
- Artichoke thistle
- Glaucous star thistle
- Golden thistle
- Corn sow-thistle

Class 5 means the above plants cannot be sold, propagated, or knowingly distributed. They are also ‘notifiable’ under the Act i.e. must be reported to local Council within 3 days of detection. Other than artichoke thistles, there are presently NO known occurrences of the above thistles in NIWAC region.
Two Thistle species are declared NOXIOUS WEEDS within parts of the NIWAC region:
- Saffron thistle Carthamus lanatus
- Nodding thistles Carduus nutans.

There are other local thistles - not declared noxious but still cause significant economic and environmental harm:
- Black/spear thistle Cirsium vulgare
- Scotch thistle Onopordum acanthium
- Variegated thistle Silybum marianum
- Stemless thistle Onopordum acaulon
- St Barnaby’s thistle Centaurea solstitialis
- Star thistle Centaurea calcitrapa
- Slender thistle Carduus pycnocephalus.

Management and Control Options

Optimum time to treat

Plants need to be actively growing for effective chemical treatment. Thistles are better treated when they are still young as they require far lower chemical rates. This lowers the risk of off-target damage to pasture or crops.

Control alternatives

Mechanical removal via chipping or slashing can be effective but time consuming. Both are best carried out before plants produce viable seeds. Herbicide options: MCPA, Lontrel, 2,4-D ester, Roundup 360®, Dicamba®. Refer to label directions. Treatment should be tailored to the particular conditions with regard to timing, rates and method of application.
WEED SPECIES BIOLOGY, IMPACTS AND MANAGEMENT

Star Thistle

St Barnaby’s thistle

Saffron Thistle
Water Lettuce

Biology

Water lettuce (*Pistia stratiotes*) is a free floating aquatic plant native to Asia, Africa and equatorial America. It is believed to have been introduced as an ornamental pond plant, but may also be native to the Northern territory and transported from there.

Identification

As the name suggests, the entire plant resembles a floating, open head of lettuce. It may also be attached to mud. This aquatic perennial is spongy and consists of a floating rosette of pale green, fan-shaped leaves covered with hairs. The horizontal runners (stolons) are up to 60 cm long and produce new plants at their tips, while at the base of the rosettes there are trailing feathery roots to 1 m long that hang below the water surface. The overlapping leaves are spoon-shaped to obovate or wedge- to fan-shaped (being broad at the top and narrowed towards the base), pale green, yellowish green or grey-green, 2-17 cm long, 1.5-8.5 cm wide, spongy, longitudinally ribbed, softly velvety hairy, and with the leaf stalk much shortened and inflated.

An inconspicuous, 7-20 mm long, whitish green flower head grows amongst the leaf bases. Within a whitish tubular or funnel-shaped bract (spathé), that opens out towards the top and is slit down one side, there is a central column or spadix which carries a pistil (female part) below a whorl of stamens (male flowers). A cup-shaped membrane separates the male and female flowers. The fruit is a berry 5-8 mm across with seeds about 2 mm long, oblong in shape and tapered at each end. The mature seeds are pale reddish brown, about 2 mm long, with a thick wrinkled seed-coat. They are largely enclosed in a cylindrical, buoyant, spongy material with an air chamber. Seeds from the muddy bottom germinate in late November-early December and float to the surface as seedlings.

Flowering and reproduction commences early in the plant’s life around the 4th or 5th leaf stage, when plant densities are high. Propagation is through flower pollination or by stolons (20 cm long), which produce daughter plants. Water lettuce is sensitive to frost and can grow in polluted water.
Impact

Although considered native to northern Australia, Water Lettuce is regarded as a weed in many parts of Australia where it can have impacts on the environment, agriculture, recreation and water supplies.

Water lettuce spreads both by vegetative reproduction and by seeds. The seeds float on the water surface and can be dispersed some distance by water flow before they sink and germinate. The buoyant seedlings can also be moved by water and assisted by wind to spread the infestation over a wide area. Propagules of Water Lettuce may also be dispersed by migratory waterfowl and waders.

The primary colony increases its size and density by developing daughter plants at the end of stolons. Further spread occurs when stolons break, freeing daughter plants from the parent mass and enabling them to disperse and form new colonies. Broken-off floating rosettes will be moved in water by stream currents, wind and floods. Broken pieces, buoyant seeds and seedlings or whole plants can also be spread by boats or fishing equipment from an infested area to a clean water body.

In Australia it is potentially a serious weed of warm-watered, still to slow-flowing water bodies. Once established, it spreads quickly over the entire surface of freshwater lakes, ponds, sluggish streams and rivers, canals and other bodies of water. Problems occur when the stolon-connected rosettes form extensive dense mats, which obstruct waterways and dams, impeding water traffic, hydroelectric systems and irrigation, and interfering with recreational activities such as boating, swimming and fishing. They hinder flood control efforts by blocking and disrupting water flow in drainage channels. Children and livestock may drown if they become entangled in the roots of a heavy infestation.

Invasion of habitats by Water Lettuce disrupts habitats and ecosystems. The dense plant mass reduces light penetration, oxygen concentrations and pH levels in the water, thus destroying the habitat of fish and waterfowl and can lead to a loss of biodiversity as it out-competes and displaces native water plants. It can also be a serious competitor in rice paddies, taking root in the soil and competing for nutrients and spaces.

There can be an increased water loss in summer in reservoirs by transpiration. Infestation by Water Lettuce can also pollute water with rotting plant material, affecting people, fish, livestock and wildlife.

Water Lettuce may form a shelter for, and a breeding site of, disease-carrying mosquitoes, especially a hazard where mosquitoes carry parasites responsible for malaria, Ross River Fever and other diseases.

Water lettuce is a declared CLASS 1 NOTIFIABLE NOXIOUS WEED within the NIWAC region. Any findings must be reported to the local Council within 3 days of detection.
Management and Control Options

Optimum time to treat

Plants can be retrieved from the water at any time of the year. Chemical treatment is not usually suitable during the winter period.

Control

New infestations may become established when plants are brought into new areas by flooding. Surveillance and physical removal at such times may prevent infestation. Public education to prevent disposal of plants from domestic situations is necessary.

Integrated control is a sensible strategy that includes the combination of mechanical, biological and chemical methods that complement each other. First make certain that the weevils are established on the infestation, and then carry out mechanical control or a spray program using a selective herbicide. Selectively controlling strips of the water hyacinth mats helps concentrate the biological control insects onto the remaining weed to increase damage.

Water lettuce removal by hand is a practical control method often used for small areas or when numbers are low. The plants should be dried to prevent regrowth and avoid water quality degradation by masses of rotting weed.

Two weevils (Neohydromonus pulchellus and Orchetina bruchi) have been introduced and exert good control in some areas. The life cycle of the weevil takes about three months. Eggs are laid in the fleshy leaves and the larvae tunnel through the plant tissue. The openings assist the entry of fungi and bacteria, causing the tissue to rot. Biological control is most effective on large infestations, but it may take many years to achieve satisfactory control if used in isolation from other methods. To establish an effective breeding population of biological control agents, infested plants should be placed in an area where the water lettuce is concentrated.

Your Local Government Office or local Land Protection Officer from the Department of Primary Industries can assist you with protocols and information on the collection site nearest to you.

When treating water which is used for irrigation purposes, the withholding period should be followed in accordance with the label recommendations. Spraying with herbicides is often the only practical method for large infestations. Diquat, 2,4-D acid, Roundup Biactive are effective. Refer to label directions. Autumn applications tend to be more effective than summer ones.
