Aleman Grass

A high value grazing species grown in flooded or ponded areas

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Description

Aleman grass (*Echinochloa polystachya* cv Amity), also known locally as German grass, is a robust vigorous aquatic or semi aquatic grass which produces long stems that tend to grow upright or float on the surface of water.

The stems are 10 to 15 mm in diameter, up to 2.5 m long and have seven to 10 nodes. Leaf blades are 10 to 25 mm wide, 200 to 600 mm long and are smooth and hairless.

The seed head is an open panicle 15 to 25 cm long, producing seeds that are 4 to 5 mm long. The seeds are sterile. The colour of the grass is light blue-green.

Climate and Soils

Aleman grass is a native of the Americas, from the southern USA to northern Argentina.

It is suitable for areas receiving more than 1000 mm average annual rainfall. It is recommended for wet, swampy areas or for seasonally flooded areas in the Top End. Aleman grass grows well in the black cracking clay soils of the Top End coastal plains where flooding can occur for six to 12 months a year.

Aleman grass tolerates deeper flooding than para grass but not as much as hymenachne. It also grows well on the drier areas of the floodplain, where para grass will not persist. It can grow in water up to 3 m deep, but prefers a depth of 1 m to 2 m.

Aleman grass will grow successfully on the solodic (bulldust) plains of the Marrakai area. It has been successfully established in swamps and low lying areas farther south, including the Katherine District.

Ponding with contour banks up to a depth of about 1.2 m to keep an area flooded for a longer period provides a good environment for growing Aleman grass.

Establishment

As Aleman grass does not produce viable seeds, it must be established vegetatively. Natural spread is by rooting at the nodes of existing canes where stems fall onto mud or damp soil or by stems which break off during flooding and float to new sites.

Cultivating the grass involves harvesting stems during the wet season when the grass is actively growing, trimming off the leaves and planting sets/cuttings with two to three nodes, 30 to 40 cm long, into mud with only one node showing. Plant the stem pieces (cuttings) straight away if possible, up 1 to 4 m apart in rows 1 to 4 m apart. Sets can be planted vertically, at an angle, or horizontally but not upside down.

Row spacing can be varied depending on when the grass will be grazed and the level of native grass competition. If a good first year stand is required, plant on a 2 m x 2 m grid. If wide row spacings are used, ploughing or spraying with glyphosate between the rows early in the next wet season will encourage spread. This planting method can also be used in water, where the top of the stems should be above the water level and the other end embedded in the mud.

Establishment will be less successful if the cuttings are not planted into the mud where there is competition from existing vegetation. Where competition has been removed, expect up to a 5-m spread from the edge of the stand each wet season.

If the soil is damp but not waterlogged and is trafficable by tractor and disc plough, drop the stems on the soil surface and disc them in, either whole or chopped. This combination of factors is often difficult to achieve in the black-cracking soils of the coastal plains of the Top End.

If kept covered in a dark, cool and moist environment, cuttings can be stored for a week or more. They will develop roots from each node prior to planting, which may aid establishment.

If a track type vehicle is available, stems can be dropped into the water or mud in front of the tracks to allow the tracks to push the runner into the mud.

Machines have been developed in the top End using a rotating flat disc on an arm using gravity to penetrate the soil. A single row planter is towed behind a 4wheel-drive motor quad bike, while multi-row planters are towed by 4 x 4 tractors. The disc pushes the runner or stem into the soft mud. This requires one or more people, other than the driver, to place the stem in front of the disc before it is buried. The stems are held on a tray close to the planting persons.

In all planting situations, success depends on removing competing vegetation so that the stems can root down from nodes in the soil. The herbicide of choice is Diuron® at 2 to 3 kg of active ingredient per hectare (ha), applied pre-planting. Aleman grass is resistant to this herbicide at low rates of application. The herbicide is particularly useful when there is a high content of native annual grasses in the area. Diuron will control new germination of all seeded species for most of the season. , Heavy competition from strong perennials will not be controlled by this herbicide. Spraying with glyphosate is also effective for an initial control treatment.

Management

Fertiliser requirements have not been clearly determined in the Northern Territory (NT).On the more fertile black cracking clays, stands have persisted well without any fertiliser use. A good response is expected to nitrogen applications. Nitrogen fertiliser applied early in the establishment phase (e.g. when grass is 20 to 30 cm tall) is likely to increase tillering and dry matter production considerably. NPK fertilisers are likely to boost Aleman grass establishment on solodic plains farther inland where all nutrient levels are low. Excellent stands have been produced after just one wet season in ponded areas, or by adding fertiliser to solodic soils.

Dry matter yields of 10 to 25 tonnes/ha can be expected after a wet season, where there is no grazing and no fertiliser has been applied to the black soil plains.

Grazing is restricted to the early dry season once water recedes, through to the early wet season (from May to November in the Top End of the NT). Generally, 16-18 months should elapse before full grazing, which will be during the second dry season. A light grazing in the first dry season may promote tillering and reduce some grass competition. Because Aleman grass is very palatable, establishment may be significantly reduced. Grazing in the first dry season, if Aleman grass is usually grazed right down to the crown by cattle, buffalo and horses during the dry season. This does not reduce its ability to regrow once moisture is again available. Over-grazing during this early regrowth stage may cause problems with survival. It is good management to not graze too low at the end of the grazing period, just before deep flooding, as plants will not survive inundation without leaf above water.

Aleman grass is more palatable than both para grass and hymenachnes. It recovers well when spelled. It is able to recover moisture from lower soil more efficiently than para grass and actively produces green shoots later into the dry season on black cracking clay soils.

Grazing productivity has not been fully measured in the Top End. Weight gains of up to 1.0 kg/animal/day have been recorded in buffalo on regrowth after early storms.

Nutrient analysis shows that nitrogen ranges from 0.8% to 2.8% in leaf samples. This equates to a crude protein (CP) content of 5% in October to 17.5% in January and June. Early wet season regrowth has produced up to 21.9% CP. Phosphorus content in the grass ranges from 0.14% to 0.48% from non-fertilised black cracking clays.

Hay making of this species would be difficult because of the thick stem. A mower-conditioner would be necessary. If soil moisture was still adequate, or irrigation was available, hay could be made from the leafy regrowth following a first cut. The grass would be suitable for silage making if soil and moisture conditions allowed machinery access onto the floodplains at the best stage of growth.

Mixtures with legume species, such as Lee joint vetch, Milgara blue pea, or Murray phasey bean for wetter areas and Bundey for only lightly flooded areas would be suitable. In the long term, most legumes will be choked out by Aleman grass.

Fire protection is recommended, although Aleman grass can recover from a light fire. There will be high losses of nutrients from the burning mulch. Burning will also lead to a period of high evaporation and a feed shortage until the next rain. A hot fire can cause significant losses of grass and replanting may become necessary. As fires are very difficult to extinguish on black-cracking clay soils, protection from fire is essential.

Pests and Diseases

No specific pests or diseases have been recorded in Aleman grass in the Top End. The native floodplain rat (*Rattus colletti*) can consume significant amounts of newly emerging shoots of Aleman grass at ground level on black soils during the dry season.

Mimosa Rehabilitation

Mimosa areas (*Mimosa pigra*) which have been eradicated are ideal for planting Aleman grass. Once good grass cover is achieved, new mimosa emergence is virtually eliminated. Ponding enhances the chances of success.

Warning

Pasture plants in general may have the potential to become weeds in certain non-grazed situations. To prevent that, ensure that vegetative material is not inadvertently transferred to adjacent properties or road sides.

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