

## 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 the water.

The stems are 10 to 15 mm in diameter, up to 2.5 m long and have 7 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 seed is sterile.

The colour of the grass is light blue-green.

### CLIMATE AND SOILS

Aleman grass is a native of the Americas, from 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 7 to 12 months a year.

Aleman grass will tolerate deeper flooding than para grass but not as much as hymenachne. On the other hand, it appears to grow well on the drier areas of the floodplain, where para grass is difficult to establish.

Overseas it is reported to grow in water up to 3 m deep.

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 further south, including the Katherine area.

Ponding with contour banks to keep an area flooded for a longer period of the year will provide a good site for the growth of Aleman grass. Banks that are planned and constructed to pond water up to a depth of about 1.2 m are suitable for growing Aleman grass. Wide based banks will last longest (less likely to wash away). Spillways need to be planned to avoid bank overflow during peak rainfall periods. Ponding will



enhance the establishment, growth and persistence of Aleman grass in areas that normally dry out quickly at the end of the wet season. Ponding also prolongs the green feed period late into the dry season. Ponds designed to hold water at different depths will prolong further the period of good quality green feed even more.

## **ESTABLISHMENT**

Aleman grass has to be established vegetatively. Natural spread is caused by rooting at the nodes of existing canes, particularly where long stems fall onto mud or damp soil.

The procedure is to harvest the long stems during the wet season when the grass is actively growing, trim off the leaves and plant sets/cuttings with two to three nodes, 30 to 40 cm long, into mud with only one node showing. Care should be taken to plant the stem pieces straight away, up 1 to 4 metres apart in rows. Plant 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, then plant spacings should be close, on a 2 m x 2 m grid. If wide row spacings are used, ploughing between the rows at the beginning of the next wet season will encourage spread from the original row. This can be done on a yearly basis until adjacent rows have merged. This method will be more economical in the planting of runners in the long term as it will reduce labour costs for preparing and planting vegetative material. Herbicide may be substituted for ploughing. Where competition has been removed, you could expect up to a 5-m spread from the edge each wet season.

This planting method can be used in water. The top of the stems should be above the water level. The other end of the stem should be embedded in the mud.

Establishment will be less successful if the cuttings are not planted into the mud because of competition from existing vegetation.

An alternative method is to drop the stems on the soil surface and disc them in, either whole or chopped, if the soil is damp but not waterlogged, and is trafficable by tractor and disc plough. This combination of events is 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, cut stems 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.

Several machines have been developed by DPIFM using the principle of a rotating flat disc on an arm using gravity to penetrate the soil. A single row planter can be 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 and requires a second person, 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 and handy to the planting person.

In all planting situations, success depends on removing competing vegetation that is present so that the stems can root down from nodes in contact with the soil. When competing plants are removed, the grass can spread up to 4 to 5 m in the first season. Rows 10 metres apart should converge within two to three wet seasons, provided the inter-row spaces are kept as clear as possible with ploughing or herbicide. The herbicide of choice is Diuron® at 2 to 3 kg of active ingredient per 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, allowing Aleman grass to spread at its maximum rate without competition. However, heavy competition from strong perennials will not be controlled by the herbicide. Nonetheless, the herbicide is probably more effective than ploughing, where new germinating growth is not controlled and competition builds up quite rapidly.

## MANAGEMENT

**Fertiliser requirements:** Little has been done in the NT to determine fertiliser requirements. However, on black cracking clays, stands have persisted well without any fertiliser use. Fertiliser requirements are likely to be similar to those of para grass where good responses to nitrogen applications are recorded in dry matter yields. Nitrogen fertiliser applied early in the establishment phase (e.g. when grass is 20-30 cm tall) is likely to increase tillering and dry matter production considerably. NPK fertilisers are likely to boost Aleman grass establishment on solodic plains further inland where phosphorus levels are low. Dry matter yields of 10-25 t/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:** Because of the wet areas where Aleman grass grows, most grazing will be restricted to the early dry season once water recedes, through to the early wet season. This period is from May to November in the Top End of the NT. 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 the water. Excellent stands have been produced after just one wet season in ponded areas, or by adding fertiliser to solodic soils.

Generally 16-18 months should elapse before grazing, that is, during the second dry season. A light grazing in the first dry season may promote tillering and reduce some grass competition. However, because Aleman grass is very palatable, establishment may be significantly reduced. Grazing in the first dry season, if attempted, should be carefully monitored.

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 has been observed that 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 levels more efficiently than para grass, actively producing green shoots later into the dry season on black cracking clay soils.

Grazing productivity has not been comprehensively measured in the Top End. However, weight gains of up to 1.0 kg/animal/day have been recorded in buffalo on new regrowth after early storms. Weight gains during the dry would be expected to be higher at the start of the season and tail off as the season progresses, if set stocked. When the grass is green, you could expect cattle and buffalo to gain from 0.3 -1.0 kg/day if there is no shortage of available feed. The advantage of ponding at different water storage levels is that green feed can be sequentially offered throughout the dry season.

Grazing productivity of beef cattle and buffalo in S America is good, where yields of 200-250 kg live-weight gain/ha/year have been recorded.

**Nutrient analysis:** 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 as high as 21.9% CP.

Phosphorus content in the grass ranges from 0.14% to 0.48% in non-fertilised black cracking clays.

**Hay making/silage:** Hay making would be difficult with this species because of the thick stem. A mower-conditioner would be necessary. If soil moisture was still adequate, or irrigation was available, better hay could be made from the leafy regrowth following the 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:** Suitable legume species would be Lee joint vetch, Milgara blue pea, or Murray phasey bean for wetter areas and Bunday for only lightly flooded areas. In the long term, most legumes will be outstripped by Aleman grass. The best method to increase the nitrogen (protein) available to the animal would be to have some hymenachne available in the same area, usually in the wettest area of the paddock or pond.

**Fire:** Although Aleman grass can recover from a fire, it is recommended that these areas be protected by firebreaks as there will be high losses of nutrients from the burning mulch, leading to a period of significantly higher evaporation and a complete absence of feed for stock until the next rains or use of irrigation. A hot fire can cause significant losses of grass. Replanting may become necessary. As fires are very difficult to extinguish on black-cracking clay soils, protection from fire is essential.

## PESTS AND DISEASES

Up to now no pests or diseases have been recorded 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

Dense mimosa (*Mimosa pigra*) areas which have been eradicated by herbicide spraying and burning are ideal for planting with Aleman grass. This will control emerging mimosa seedlings. Once good grass cover is achieved, new mimosa emergence will be 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 pasture seeds and/or vegetative material is not inadvertently transferred to adjacent properties or road sides.

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