AGRI UPDATE
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GIANT JUNCAO GRASS CULTIVATION IN KWAZULU-NATAL

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Giant Juncao Grass is a Giant Napier hybrid (*Pennisetum purpureum X P. typhoideum*) It is a tall - growing (3 m +) grass with a strong, fibrous root system. As such, it has a high production potential for palatable forage in the warmer areas of KwaZulu-Natal – yields of 300 tons (green) material are readily achieved. Indeed, yields in excess of 450 tons (green) material have been recorded under good management with adequate moisture and nutrition levels. To date, no incidences of Prussic acid poisoning in goats or cattle have been observed.

While it grows on a wide variety of soil types, light loams and sandy soils are preferred. Soils prone to waterlogging and regular flooding should be avoided. Once established, it tolerates short dry spells.

Optimum temperatures for growth range from 25°C to 35°C, with growth ceasing at and below 5°C. It is tolerant of light frosts – especially if there is sufficient leaf growth to protect the crown and growing tip of the plant. This should be taken into account when defoliating the grass prior to the onset of winter.

Figure 1: Six weeks (summer) regrowth on left of photograph

Uses of the grass

The grass can be used in a variety of applications:

* As mushroom substrate for at least 49 types of edible and medicinal mushrooms.
* For feed for cattle, goats and poultry – ideally in a 'cut and carry' system.
* As windbreaks.
* As shade material for mushroom shelters.
* As a 'vegetative agent' in soil and water conservation practices.

Establishment and management

While it is possible that, under certain conditions, the grass may flower, it is unlikely that viable seed-setting will occur. The grass is, therefore, for all practical purposes, best planted using cane cuttings with at least two fully intact internodes.

Planting should take place as early as possible in spring once the temperatures have warmed up and rainfall patterns have 'settled' – especially if no supplementary irrigation is available.

Hand planting

A plant spacing of 30 cm within the row and with a row spacing of 50 cm between rows is recommended. This results in a planting density of about 667 plants per 100 square metres. In the absence of a soil test, 7g (two level scoops of a small, plastic teaspoon) of 3:2:1:(25) fertilizer should be applied to the specific planting spot and mixed with the soil immediately prior to planting the cane cutting (if a soil test has been carried out, the recommendations for a *tropical grass* should be followed). The cuttings should then be buried in the soil

(either vertically or at an angle) with two nodes below the surface and the soil compacted. Great care should be taken to ensure the cuttings are not planted upside down.

Figure 2: Hand planting

Machine planting

The most effective machine for this purpose is a sugar cane planter. Generally these machines are purpose built, expensive and may be difficult to source. However, should such a machine be readily available, the recommendation of 50 cm rows and planting density of 667 plants per 100 square metres is still applicable. In the absence of a soil test an application of 3:2:1 (25) at 350kg/ha should be applied in the row.

Notwithstanding the planting method used, watering should follow as soon as possible. Once the plants have grown to a height of 200 mm, 250 kg of limestone ammonium nitrate (LAN) fertilizer per hectare should be applied (as a side dressing) to promote tillering. In cases where fertilization is done by hand, the above-mentioned recommendation equates to roughly 4 g LAN (one level scoop of a plastic teaspoon) per plant.

Utilisation

Irrespective of the purpose for which the herbage will be used, a 'stubble barrier' of 150 mm above ground level should always be present. This practice not only protects the crown of the plant but also encourages more rapid regeneration from the basal buds.

* For use as a livestock feed, important quality guidelines are listed in Table 1.
* If used as a (mushroom) substrate for *Pleurotus, Agaricus* or *Hericium erinaceus* cultivation, 3-4 cuts are usually possible in a (9 month) season. If used for *Lentinula edodes* or *Auricularia auricularia*, 2 cuts can be taken within a season.

It is not recommended, in any circumstances, that livestock be given free access to graze the herbage. Severe, physical (hoof) damage to the crown occurs under grazing. This severity increases with the size/mass of the animal. Significant damage to the canes/stems has also been observed. In such instances, regrowth is severely and adversely affected. For this reason, a 'cut and carry' system of utilization is recommended. Such a 'cut and carry' system has other benefits insofar as not only is wastage reduced, but herbage use can be controlled or 'rationed' effectively during times of shortage.

After each defoliation, a side-dressing of 150 kg/ha nitrogen should be applied. This should be followed as closely as possible by an application of water (about 25mm).

Figure 3: Six weeks growth

Table 1 : Nutritive value of Giant Juncao Grass over time

Growth Period	Dry Matter (%)	Dry Matter (%)				
		Crude Protein	Crude Fibre	Crude Fat	N-Free Extract	Ash
4 weeks	15.8	10.8	28.5	3.8	43.0	13.9
6 weeks	17.1	8.8	32.2	3.5	42.6	12.9
8 weeks	18.3	8.7	32.8	3.3	44.3	10.9
10 weeks	18.5	6.5	33.0	2.7	46.4	11.4
12 weeks	20.4	5.9	31.9	2.9	49.0	10.3

Figure 4: Phenomenal production potential

Figure 5: Canes suitable for planting material and/or stockfeed