

Cultivation and utilization of Napier grass

Species: Pennisetum purpureum

Common Name: Napier grass

Varieties: Bana grass, French Cameroon, clone 13 and Kakamega 1

Benefits in a smallholder farming system

Gives high herbage yields throughout the year compared to other grasses.

Controls maize stalkborer by trapping the ovipositing moths if planted round the maize moths.

Protects the maize from strong winds if planted round a maize field.

Napier grass can also be sold as green fodder.

Holds soil together and prevents run off and erosion if planted round the maize

Institutions where developed

Bana grass and French Cameroon were collected from South and West Africa and developed to fit into the Kenyan smallholder farming system at NARC Kitale.

Clone 13 was selected from French Cameroon by scientists from NARC Kitale and is resistant to snow mould fungal disease.

Kakamega 1 was developed by the Regional Research Centre Kakamega through collections supplied by ILRI and is tolerant to headsmut fungal disease.

Areas where adapted

- Low to medium altitude areas
- Zones 11, 111 and IV
- Can grow in a wide range of well drained soils.
- Rainfall in excess of 900 nun per year is required for high herbage yields.

Growing period

- Recommended to remain in same field for 3 to 5 years.

Land preparation

- Plough and harrow the field well before planting .

(i.e. seedbed should be as good as that for planting maize).

How to plant: Two methods may be used, namely:

1. Conventional method

- Dig up a width of 15-20 cm and a depth of 15-20 cm at a spacing of 3 ft (90 cm) between rows x 2 ft (60 cm) between plants.
- In each hole apply one or two handfuls of farm yard manure (10 tons/ha FYM) or (20 to 40 Kg P205 /ha)
- Place a 3-node cane at a slanting position in the soil, ensuring that two nodes are covered by the soil.
- Place the root splits into the planting holes and cover with soil

2. Tumbukiza method

This method gives higher herbage yields even during the dry season than the conventional method. There are two types of tumbukiza, namely the round pit type and the rectangular pit type.

For round pits dig up a diameter of 60 cm and a depth of 60 cm. The rows of pits should be 60 cm apart.

For rectangular pits:

- Dig pits 60 cm deep by 60-90 cm wide
- The length of the pit can vary depending on available land
- The pits should be 90 cm apart

For both round and rectangular pit type

- Separate top soil from sub soil.
- Mix 1 debe of top soil with 1 to 2 debes of farm yard manure and put into the pits.
- Leave about 15 cm unfilled space at the top of each pit.
- Plant 5 - 10 cane cuttings or single root splits in round pits.
- In rectangular pits, plant 5 - 10 cuttings or single root splits for every 90 cm length.

Intercropping

- Napier grass can be intercropped with forage legumes in both methods of planting.
- The legumes to be intercropped with Napier grass include desmodium, stylosanthes and Macrotyloma axillace.
- When intercropping under the conventional method, make furrows along the Napier grass lines or in between rows and drill desmodium seed at a seed rate of 3 kg/ha, mixed with 40 to 60 kg P205 ha-1
- In the tumbukiza method drill desmodium seed in between the tumbukiza holes

Management

- Hand weed after every cutting/harvesting if there are weeds.
- Apply farm yard manure at the rate of 5 to 10 ton ha-1 or slurry after every 4 to 6 harvests.
- Inorganic nitrogen fertilisers can also be used at the rate of 60 - 90 kg N ha-1 (5 to 8 bags of CAN fertiliser).

Diseases and pests

Napier grass is attacked by various fungal diseases in localised areas.

- In Central Kenya, Bana grass, French Cameroon and Clone 13 are attacked by headsmut caused by *Ustilago camerumensis*. Kakamega 1 Napier variety has been found to be tolerant to this disease.
- In western Kenya, especially in Bungoma, Busia and Migori Districts, Napier grass has been found to be attacked by *Helminthosporium* spp. New varieties of Napier grass are currently being screened for tolerance to this disease.
- Snow mould fungal disease is common to all Napier grass varieties except Clone 13. However, this disease is not a threat to herbage production.
- Pests are not a problem to Napier grass.

Harvesting

- Napier grass is ready for harvesting 3-4 months after planting and harvesting can continue at an interval of 6-8 weeks for 3 - 5 years.
- Leave a stem length of 10 cm from the ground at harvesting.
- How to store
- Napier grass is fed green to livestock.
- Excess green feed can be preserved in the form of silage.

Potential Yields

Yields depend on agro-ecological zone and management but on average Napier grass can give 12 to 25 tons/ha of dry matter yield

Utilisation

- Chop the harvested Napier grass and desmodium to reduce wastage while feeding to animals.
- Do not graze animals directly on Napier grass.
- Feed 70 kg or 7 headloads of fresh Napier grass to a dairy cow per day.
- One acre of Napier grass planted by the conventional method can give enough feed for 1 to 2 dairy cows for one year.
- One acre of Napier grass planted by the tumbukiza method can give enough feed for 2 to 3 dairy cows for one year.

Source of planting material

- Research Institutions
- Other farmers
- Ministry of Agriculture and Rural Development
- Marketing Channels
- Milk is marketed through KCC, private milk processing plants and through hawkers.
- Napier grass can also be sold directly as green feed especially in peri-urban centres.

For more information, contact:

The Director
Kenya Agricultural Research Institute
PO Box 57811
NAIROBI
Tel: 02-583301-20; fax: 02-583344;
e-mail: Resource.centre@kari.org