

How to plant a healthy disease free field

1. Prepare the land well, remove (rouge out) any traces of Napier grass if any was in the field targeted for planting.
2. Seek, select and use healthy and disease free planting material. To establish the Napier crop one can use either mature Napier canes and/or root splits.

Plant a 3-node cane into the ground at about 30 degrees, so two of the nodes are buried in the soil and one is above the ground. Plant more rows with a spacing of about 90 cm (3 feet) between the rows x 2 ft (60 cm) between plants. Under ***the push pull technology system*** plant at least three rows of NSD resistant Napier all round the maize field. The spacing should be 75 cm between rows and 50 cm between Napier grass plants within a row.

Use above spacing and place the root splits into the moist planting holes and cover with soil but leave the shoots open to the air. These establish quicker but need lots of water.

3. For best results the planting hole should be enriched with well prepared farmyard manure where possible.
4. Use clean materials for planting from reputable bulking sites like ***icipe*** –Mbita, KALRO, Western Kenya ATCs and some commercial bulking farmers. e.g. varieties like Ouma II, South Africa, Phanice, Wanga and Tundwe cultivars among others.
5. Weed the Napier grass plot regularly. If any of the cuttings die, fill in the gaps with new ones.
6. Harvest the grass following a pattern. Harvest the grass when it is 90-120 cm (3-4 feet) high. Beyond that height most of the nutrients will be stored in the canes. Begin the continuous cutting at one end of the row, cut enough grass to use. Where possible apply liquid manure.

Napier grass Do not's:

Do not intercrop Napier with cereals, allow them to overgrow or allow animals to graze directly on them.

Advantages of a healthy disease free field

- Increased and assured Napier fodder production, from a healthy and clean fodder plot.
- A continuous supply of cattle green feed from the resistant Napier grass varieties.
- Earn an income from both fodder seed and feed sales.
- Increase in cash from selling more milk from your cattle and goats.
- Increase income from farm unit, accruing from fodder enterprise.
- Napier grass propagates easily, is fairly drought-resistant and grows very fast.



Where do I get Napier Stunt Disease resistant planting material

Contact ***icipe***, Agricultural Training centres, KALRO or nearest Agriculture/Livestock office for direction.

icipe – Working in Africa for Africa...

The International Centre of Insect Physiology and Ecology (*icipe*) was established in 1970 in direct response to the need for alternative and environmentally friendly pest and vector management strategies. Head-quartered in Nairobi, Kenya, ***icipe*** is mandated to conduct research and develop methods that are effective, selective, non-polluting, non-resistance inducing, and which are affordable to resource-limited rural and urban communities. ***icipe's*** mandate further extends to the conservation and utilisation of the rich insect biodiversity found in Africa. ***icipe's*** Capacity Building Programme aims to promote the development and utilisation of sustainable arthropod management technologies by enhancing the research and training capabilities of countries in Africa. The Centre's major areas of capacity building activity are: (i) Capacity building and professional development of university lecturers, researchers, and professionals in insect and related sciences; (ii) institutional development by nurturing and strengthening higher education, research and extension institutions;

(iii) promoting innovations on insect science, in collaboration with regional and national agricultural research and advisory services, and the private sector. These objectives are realised through postgraduate training at PhD and MSc levels, professional development schemes for scientists, and non-degree training for technicians, scientists, community members and extension workers.

DONORS: European Union, UK Aid from the UK Government Biovision Foundation, Switzerland and Norad. **COLLABORATORS:** Kenya Agricultural and Livestock Research Organisation (KALRO); Ministry of Agriculture (MOA), Kenya. Visit: www.push-pull.net

ACKNOWLEDGEMENT: We gratefully acknowledge the financial and technical support of our core donors: Swiss Agency for Development and Cooperation (SDC), Switzerland; Swedish International Development Cooperation Agency (Sida), Sweden; UK Aid, Government of the United Kingdom, Norad; Ministry of Higher Education, Science and Technology, Kenya; and Government of the Federal Democratic Republic of Ethiopia. We also recognise specific restricted project donors and partners.

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Overcome The Napier Stunt Disease

using new disease resistant Napier varieties which ensure reliable fodder production and sustained support for the small-holder dairy sector



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What is Napier grass?

Napier grass (*Pennisetum purpureum*) is a high-yielding fodder grass which tolerates frequent cutting. These qualities make it the most important fodder grass in East Africa. It is grown by the majority of the region's smallholder dairy and cereal farmers.

What is Napier Stunt Disease (NSD)?

NSD is a disease that affects Napier grass. Its symptoms are visible in the re-growth that happens after the grass has been cut or grazed. Affected plants are recognized by severe stunting and yellowing, and a profuse growth of shriveled, unhealthy new plant shoots.

Often the whole stool is affected, and dies. NSD also attacks other fodder grasses such as *Cynodon dactylon* and *Hyparrhenia rufa*.



What causes the Napier Stunt Disease?

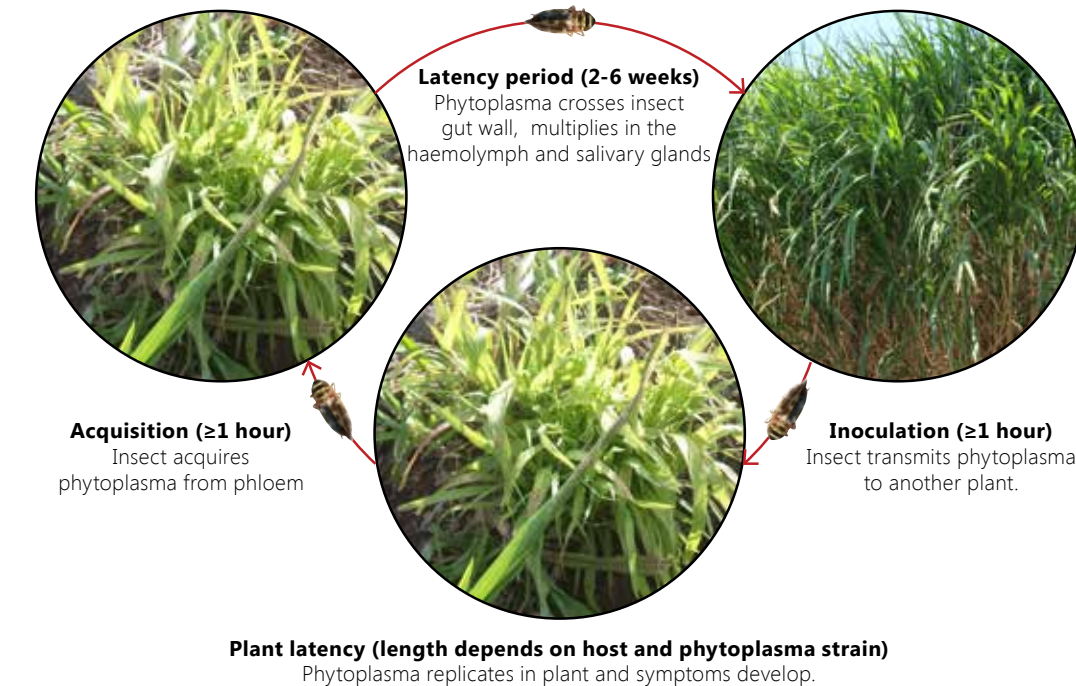
- NSD is caused by a specialized bacterium called phytoplasma, which stops the grass from taking up the nutrients it needs to grow. (specifically 16SrXI, already known to cause stunting in rice and Bermuda grass).
- The phytoplasma are also spread through the common practice of propagating diseased split Napier grass roots for multiplication.

How is Napier Stunt Disease transmitted?

The phytoplasma are carried from plant to plant by the leafhopper *Maistas banda* Kramer, which draws its food from the part of the Napier grass which is infected by phytoplasma. High population densities of *Maistas banda* Kramer on study field sites confirmed the identification of the leafhopper as the principal insect vector for NSD.



Phytoplasma transmission cycle



The phytoplasma are also spread through the common practice of propagating split Napier grass roots for multiplication. After rigorous research trials, *icipe* selected and released two Napier varieties which are resistant to the Napier Stunt Disease for the technology transfer. Namely, these are Ouma II and South Africa cultivars, which were released to farmers for an integrated disease management approach.

Have you seen Napier stunt Disease damage your fodder crop?

Fodder losses are big and can even result in nil harvest. The symptoms are well observed on re-growth after grazing or cutting the grass. Affected grass becomes yellows, stunted, with profuse growth of withered unhealthy new plant shoots and most often the whole stool dries up and dies.



Napier stunt disease damage on Napier grass



Napier stunt extensive damage to fodder field

Napier Stunt Disease resistant Ouma II(A) and South Africa cultivars (B)

