

## Unlocking livestock productivity in East Africa, *icipe* makes strides in addressing fodder challenges caused by a stunting disease of Napier grass



*A farmer weeding her disease-resistant Napier grass in Suba, western Kenya (left). Prof Zeyaur Khan, the program leader explains to journalists the identification process of the disease-resistant Napier grass cultivars (in the background) in Kisumu, western Kenya (right)*

Napier grass, *Pennisetum purpureum* (Poaceae), is an important crop that significantly contributes to livelihoods of small-scale farmers in western Kenya by supporting the smallholder dairy and cereal production systems in the region. It is the main fodder for the dairy industry, in addition to its novel use as a trap plant for management of cereal stemborer pests in the 'push-pull' technology. It also serves as a soil conservation crop that is planted for environmental protection to stabilize soils and act as windbreak, a building material, and as firewood. Cultivation of Napier grass has recently intensified in East Africa as small-scale dairy farming shifted from extensive to zero-grazing systems in the areas where farm holding sizes are small. Farmers who have no livestock or have excess fodder sell bundles of Napier grass to other farmers in need of fodder (see below), making the crop a valuable source of income to farm households in the region. However, continued contribution of Napier grass to the livelihoods of the smallholder farmers in the region is threatened by a stunting disease (known as Napier stunt) whose effects only become visible in regrowth after cutting or grazing. In western Kenya, the disease is associated with a 16SrXI phytoplasma strain. The disease is transmitted by a leafhopper, *Maiestas banda* that acquires the pathogen passively during feeding on the phloem parts of an infected plant. The affected plants show symptoms that include foliar yellowing, small leaves, proliferation of tillers and shortening of internodes to the extent that clumps appear severely stunted. Often the whole stool is affected, with complete loss in yield and eventual death of the plants. The disease is spread through planting of infected material and by the insect vector.



*Vendors selling Napier grass in Luanda, western Kenya*

The effect of Ns disease has been serious for the dairy sector in Western Kenya, an industry that plays an important role in the livelihoods of many farm households in generating income and employment. Despite the obvious damaging effects of Ns disease in Western Kenya, there remained no effective control method for it.



*Disease-infected Napier grass in Kitale, western Kenya*

With funding from the McKnight Foundation (USA) and the Fund Council (through the IITA-led CRP1.2 on Integrated Systems for the Humid Tropics-Humidtropics), *icipe* and partners assembled over 100 cultivars of Napier grass available with genebanks and farmers and screened them for resistance to the disease. These efforts bore fruit with the identification of two cultivars resistant to the disease, South Africa and Ouma2, the latter being named after the farmer in Busia in western Kenya from whom the

cultivar was obtained. Currently 15 farmers in western Kenya are growing these cultivars as a source of planting material for distribution to farmers in East Africa. A business model is being developed to allow for doing this as a business. This will help solve the problem of the disease in the region and unlock the productivity of livestock for improved incomes. In addition, capacity of national systems and farmers on disease diagnosis and management is being built, with 15 technical staff belonging to national institutes- 5 from Kenya Agricultural Research Institute (KARI), 3 from National Agricultural Research Organization (NARO-Uganda) and 7 from local Universities in Kenya. Additionally, 15 farmers have been trained as lead farmers to train others in western Kenya on management of the disease resistant cultivars.