

Brachiaria grass significantly increases livestock productivity in East Africa

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Project summary

Forages are the most important feed resources constituting up to one hundred percent of daily diets of livestock in East Africa. Shortage of forages both in quality and quantity especially during the dry seasons is major reason for the lowest livestock productivity in the region. Therefore, this programme aims to increase availability of quality forage in the program areas of Kenya and Rwanda through the development and promotion of drought and low fertility adapted Brachiaria grass varieties. Program also aims to establish Brachiaria seed production business as an additional income source to the smallholder farmers of program countries.

Outputs

Five improved Brachiaria varieties: Basilisk, Marandú, La Libertad, Piatá and Toledo were found adapted to drought and low fertility soils in Kenya and Rwanda (Fig. 1).

Introduction of these varieties in program areas increased milk (15 to 100%) and meat productions (>50% in young cattle), and extended on-farm forage availability by three drier months.

Methods for isolation, identification and characterization of endophytes were developed (Fig. 2). Over 700 fungi and 111 bacteria were isolated and molecular ID is available for 515 fungi and 101 bacteria.

Among fungi isolated were *Acremonium* spp., the group previously reported to be seed transmitted and beneficial to Brachiaria. Characterization of 84 bacterial strains showed them all with at least two properties beneficial to plant. Further evaluations of these microbes for drought tolerance is in process.

So far we have very little success in producing Brachiaria seeds in Kenya and Rwanda. Effort to identify seed production niche is ongoing.

Partnerships

1. Kenya Agricultural & Livestock Research Organization, Kenya
2. Rwanda Agriculture Board, Rwanda
3. International Center for Tropical Agriculture, Colombia
4. Grasslanz, New Zealand
5. AgResearch, New Zealand



Fig 1. Farmers evaluating Brachiaria varieties at KALRO–Katumani, Kenya

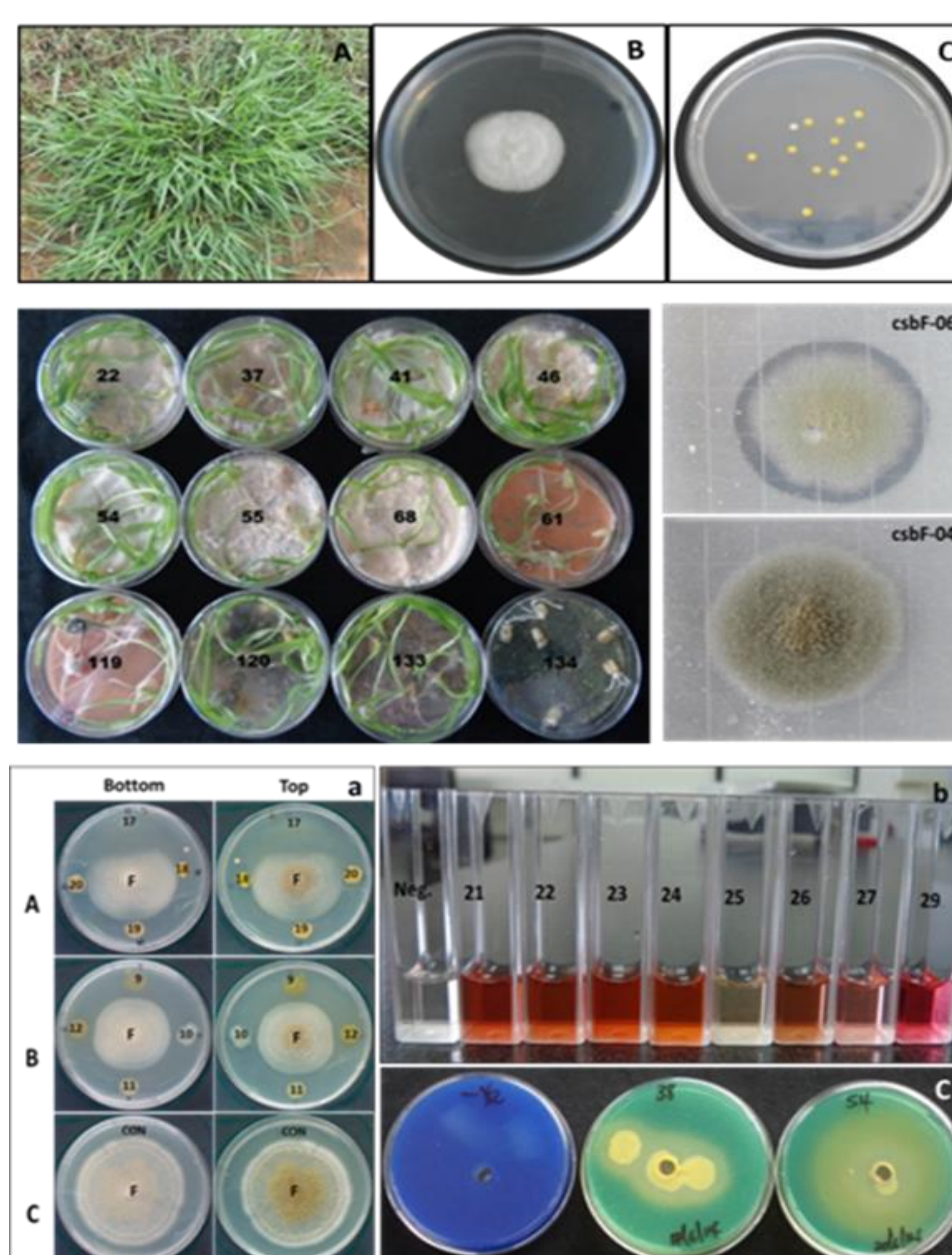


Fig 2. Microbial isolation (top most panel) and characterizations (middle and bottom panels)

Outcomes

Over 2900 farmers involved in on-farm evaluations of Brachiaria grass in Kenya and Rwanda are benefitting from increased livestock productions and forage availability.

Brachiaria is highly appreciated by farmers. Farmer to farmer exchanges of information and planting materials within and between the villages is taking place.

Program has been successful in creating awareness among farmers, researchers, development agencies and policy makers on Brachiaria. It has received considerable attention of news papers and media as well as in many scientific meetings and conferences. Some African NARS has engaged in collection and characterization of local Brachiaria genetic resources.

Microbial methods developed to study endophytes and other plant associated microbes in Brachiaria grass have been utilized by more than 13 program researchers, African NARS scientists, graduate students and interns.

Potential to scale-up

- Forages are backbone of African animal agriculture and feeding concentrate to animals is limited as the region heavily relies on imported foods.
- There is high demand for climate-smart forage technologies in the region. Some technologies developed in this program have been recently out scaled by USAID's Feed the Future Program in Kenya, and have been integral parts in two livestock development grant applications each for Mali and Cameroon.
- We are approached by regional NARS and development agencies for climate-smart forage technologies and technical backstopping on forages development activities.

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