INNOVATION: CLIMATE-SMART BRACHIARIA GRASS

Why Brachiaria grass?

Seasonal availability and low-quality forages are attributed to a low livestock productivity in several low- and middle-income countries (LMCs). Overgrazing, land degradation, and frequent and extended droughts have dwindled the productivity of many cultivated forages. To alleviate these challenges of livestock production, InnovAfrica project has been promoting Brachiaria grass as a new forage option to farmers in Ethiopia, Kenya, Rwanda and Tanzania. Brachiaria, a native African grass, is well adapted to drought and low fertility soils, produces high amount of nutritive biomass, improves livestock productivity and confers multiple environmental benefits e.g. reduction in greenhouse gas emission and ground water pollution. Brachiaria grass is suitable for both grazing and cut and carry systems of livestock production, and it can be fed to livestock as fresh or conserved as hay and silage for dry season feeding.

Brachiaria grass fields in Kenya

Where to grow Brachiaria grass

Brachiaria grass can be grown in almost all soil types in the tropics and sub-tropics within an altitude range from sea level to 2,400 m a.s.l and annual rainfall of above 700 mm but no dry spell of longer than 4 months. Brachiaria grass is more productive when grown in fertile soils with irrigation. Brachiaria grass does not perform well in areas with frost problem.

How to grow Brachiaria grass

Brachiaria grass can be grown from seeds and from the rooted vegetative tillers (RVTs). For one hectare 5 - 7 kg seeds or 80-160 thousand RVTs (spacing of 0.5 m x 0.25 m) are suggested. For successful establishment, application of phosphorus at a rate of 250 kg Triple super phosphate is necessary or well cured manure at a rate of 10 to 12 t/ha. Brachiaria grass cultivars promoted by InnovAfrica project are Basilisk, MG-4, Piata and Xaraes. The cost for growing Brachiaria grass in the first year would be similar to that of planting Rhodes grass, and the cost will reduce by 30 to 40% from the subsequent years. A well-managed Brachiaria

grass with regular nitrogen fertilizer topdressing (100 kg N/ha per year) can yield up to three-folds higher net profits than Rhodes grass.

Brachiaria grass seeds (left) and rooted vegetative tillers (right)

What is the productive lifespan of Brachiaria grass?

This is a perennial grass and if well-managed, it can be harvested every 8-12 weeks. However, during the dry season it would require a longer period to accumulate herbage biomass. The productive lifespan of Brachiaria grass is about 20 years in a well-managed condition.

Impact on livestock productivity

Brachiaria grass has high biomass production potential (30 tons dry matter ha^{-1} $year^{-1}$). Its nutritive value is often higher than those of the most tropical grasses. For example, in the highlands of Central Kenya, and low rainfall and sub-humid areas of Rwanda, most Brachiaria cultivars had a mean crude protein content of 14 - 17 % when harvested at 6 to 8 weeks. All cultivars met the minimum level of crude protein required for ruminant maintenance (7%) and milk production (11%). Feeding dairy cows with Brachiaria grass has been proven to increase milk production by 15 to 40% compared to feeding them on local forages. Similarly, substituting Napier grass with Brachiaria in feed increases daily body weight gains in cross bred heifers from 375g to 580 g in Rwanda.

Expected outcomes

- Increased availability of quality forage
- Improved milk and meat production
- Increased income and improved livelihoods of livestock farmers
- Provides business opportunities and creates employment
- Improves soil quality and the environment

Main recommendations

1) Brachiaria grass is a forage suitable for all types of livestock producers and livestock production systems in the tropics and subtropics.
2) Production of Brachiaria hay and/or silage and rooted vegetative tillers are profitable agri-business for youth and women farmers.

3) Scaling of Brachiaria grass is imperative for the transformation of livestock sectors in Africa and other low- and middle-income countries.

Cattle grazing on Brachiaria pasture (left) and bales of Brachiaria hay

Further reading and links

Njarui DMG, Gichangi EM, Ghimire SR, Muinga RW (2016). Climate smart Brachiaria grass for improving livestock production in East Africa – Kenya experiences. Kenya Agricultural and Livestock Research Organization, Nairobi, Kenya, p. 271.

Miles JW, Maass BL, do Valle, C.B. *Brachiaria: Biology, agronomy and improvement*. International Center for Tropical Agriculture, Cali, Colombia, **1996**, p. 288.

Website: http://innovafrica.eu/

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This project is funded from the European Union's H2020 research and innovation programme under Grant Agreement No. 727201