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SIMLESA
Sustainable Intensification of Maize and Legume Systems for Food Security in Eastern and Southern Africa

KALRO
Kenya Agricultural & Livestock Research Organization

Australian Government
Australian Centre for International Agricultural Research

COUNTRY POLICY BRIEF

ENHANCING AGRICULTURAL RESILIENCE AND SUSTAINABILITY IN KENYA

Brachiaria: The new grass feeding soils and livestock in Kenya

Summary and key facts

Mixed crop livestock systems are the centerpiece of some of the most productive agriculture in Kenya and therefore need to be managed sustainably

Mixed crop livestock systems require careful balance between retaining sufficient amounts of soil cover to stem water and wind erosion- this should be communicated to farmers through knowledgeable extension services

Livestock feed shortage is now a widespread problem in Kenya. The most common feed crop - Napier grass - is low yielding and susceptible to diseases and climatic stress

A new fodder crop, brachiaria is gaining traction. It has superior yields of up to 35 tons/ha of high quality feed with 7% more protein than Napier. It does well in poor soils and it also improves soil health.

What is the problem?

A lack of crop livestock feed is costing food and economic productivity in Kenya

Mixed crop livestock systems are the centerpiece of some of the most productive agriculture in Kenya and can go a long way to improve soil fertility and increase food production. However, the successful integration of crops and livestock depends on optimizing land allocation for crops and livestock feed. Similarly it requires careful utilization of crop residue as soil mulch or livestock feed with emphasis on manure production for soil recapitalization. It also requires careful balance between retaining sufficient amounts of soil cover to stem water and wind erosion. There is a continuing feed shortage in Kenya due to poor soil management and overstocking. Napier which is a major fodder in most parts of Kenya is challenged by stunting disease, head smut and shortage of planting materials. It is also susceptible to climatic stressors reducing its availability and placing pressure on other crops.

What solutions were identified from research?

Win-win: Bracharia is a promising livestock feed source and improves soil health

Brachiaria is a new grass and an emerging forage option for livestock production in Kenya. Brachiaria grass species is a climate-smart grass due to its high productivity under intensive use, and its tolerance of low soil fertility as well as relative freedom from pests and diseases. It aids in erosion control as it covers the ground well, it withstands heavy grazing and establishes on poor and rocky soils. Data on nutritive value indicate that forage from brachiaria is highly palatable to livestock, leading to high intake, whether fed fresh or grazed in the field.

The Sustainable Intensification of Maize-Legume Cropping Systems for Food Security in Eastern and Southern Africa (SIMLESA) was a project implemented between 2010 and 2018 in Kenya with the aim of identifying ways to increase food security, productivity and income levels by integrating sustainable intensification practices to increase productivity, while simultaneously protecting the natural resource base .

One way to achieve both higher yields and conserve resources is to ensure long term and sufficient recycling of crop residues. However, the use of crop residues for mulch means farmers sacrifice livestock feed. One way to do this is to produce livestock feed using feed crops, relieving pressure on crop residues for mulching and soil maintenance. Four varieties of brachiaria were introduced in the SIMLESA project in 2015 in collaboration with the International Livestock Research Institute.

Yield potential and nutrients content of brachiaria and other selected grass

	Brachiaria grass	Napier grass
		
Yield dry matter (t/ha/ year)	21-28	12-25
Crude protein %	16	7

Source: SIMLESA technical reports (2015); KALRO annual reports (2015)

Positive attributes of brachiaria grass: High acidity is damaging plant health as it inhibits root development, and therefore reduces water and mineral uptake. Brachiaria grass does better in acid soils than other grasses as well as in moderately fertile soils. The use of climate-smart brachiaria grass resulted in increased milk production with a range of 3-5 lit/day equivalent to 33% above the norm.

Brachiaria grass yield ranges between 30-35 tons/ha at 12 weeks interval cutting in the medium altitude. Under rainfed conditions the grass is harvested 3-4 times. While under irrigation it is cut between 5-6 times depending on the management. The grass improves the stability of the soil making it less prone to erosion. It also improves the health of the soil increasing air-flow and biological quality: All important aspects of healthy and productive soils.

The particular mix of technologies developed by SIMLESA are known as "Conservation Agriculture-based Sustainable Intensification" (CASI) These practices involve minimizing soil disturbance by reducing or eliminating aggressive tillage methods, maintaining at least 30% soil cover using live or green mulch and ensuring crop rotations or intercropping. The use of crop residues for mulch means farmers sacrifice livestock feed.

What are the opportunities for policy action?

Mainstream Bracharia in mixed crop livestock systems

Promote and incentivize the use of brachiaria as crop feed in Kenya. The positive results described call for a county level and national policy on improving access to brachiaria forage seed. Various actions can be undertaken to mainstream the new feed crop into Kenya's farming systems. These include:

Establishing secondary fodder seed multiplication sites close to farmers.

County governments should provide starter funds to establish the multiplication sites and organize farmers.

Enacting institutional reforms for grazing by involving stakeholders in coming up with approaches that allow retention of some crop residues to complement the alternative forages.

Why Act Now?

The viability of Kenya's mixed crop livestock systems will depend on availability of sustainable feed sources. It will also depend on soil management systems that do not mine the soil. The introduction of new technologies and crop species such as bracharia should be prioritized.

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Acknowledgements

Financed by the Australian Centre for International Agricultural Research (ACIAR), SIMLESA program was led by the International Maize and Wheat Improvement Center (CIMMYT) in collaboration with Kenya Agricultural and Livestock Research Organization (KALRO), numerous partners, including national agricultural research institutes in Ethiopia, Malawi, Mozambique, Rwanda, Tanzania and Uganda in collaboration with other CGIAR centers. Other regional and international partners include Queensland Alliance for Agriculture and Food Innovation (QAAFI) of the University of Queensland, Australia and the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), among others.

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