Forage seed systems in eastern Africa: Challenges and opportunities

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Introduction

Africa’s Livestock revolution

Meat and milk in developing countries is predominantly produced in mixed crop-livestock systems, although productivity is still low.

Herrero et al, 2008

By 2050 the demand for meat, milk, eggs will have doubled

Steinfeld et al 2006; FAO 2006
LivestockPlus – A concept

Forages for producing meat, milk, manure, and more.....

Approaches/Innovations
- Agroecological crop-livestock-tree systems
- Genetic yield, quality, stress resistance
- Social creating enabling environments, markets, building social and human capital

Livelihood benefits
- Milk
- Beef, meat
- Eggs
- Manure
- Adaptation to climate change
- Food security
- Income generation (+PES)
- Poverty alleviation
- Nutritional security

Environmental benefits
- Soil quality
- Resource use efficiency
- Restoration of degraded lands
- Mitigation of climate change
- Biodiversity conservation
- Other ecosystem services

A pathway for sustainable intensification
Forage contribution to livestock productivity

Livestock production costs

- Feeds and Feeding: 36%
- Labour, health services, A.I etc.: 64%

Odero-Waititu, 2017
Potential of improved forages in eastern Africa

- Current potential of mixed crop-livestock systems in e.g. SSA remains largely underexploited

- Recent economic foresight had shown for example improved forages e.g. *Brachiaria* has the potential to increase milk production by up to 40% - Gonzales et al. 2016

![Livestock Production System Map](image)

**Figure 1:** Production systems map of the study area.
Source: Authors’ creation using data documented by Robinson et al. (2011).

![NPV/IRR Isoquant Map](image)
Fig. 1. *Brachiaria* seed (tons) sold across eastern African countries (2017-April 2018) from Advantage Crops Limited. (Data obtained from Advantage Crops Limited).
Integrated Seed Sector Development

**ISSD is a sector-wide inclusive approach that**
- Builds seed programmes upon a diversity of seed systems
- Strengthens seed enabling environment

Creating vibrant, market-oriented and pluralistic seed sectors, enhancing farmers’ access to quality seed of superior varieties, thereby contributing to food security and economic development


By Bram De Jonge

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7- Representation of farmers and civil society organisation in established seed agencies

- Seven countries (Ghana, Kenya, Malawi, Rwanda, Senegal, South Africa and Uganda) have clearly established national seeds committees, and/or variety release committees, or seed regulation committee in which farmers and/or NGOs are represented

- eleven countries (Benin, Burkina Faso, Cote d'Ivoire, Madagascar, Mali, Mauritania, Mauritius, Morocco, Niger, Nigeria and Tanzania) have established such committees in their laws or policies and either fail to enunciate their memberships or fail to include farmers or NGOs among the proposed members

- three countries (Botswana, Zambia and Zimbabwe) are silent on such committees in their existing seeds regulations

- Four countries (Algeria, Burundi, Cameroon, Ethiopia) have provided in their regulations that the setting up of such committees is subject separate regulations.


by Dr Marcelin Tonye Mahop
Eastern Africa (Ethiopia, Uganda, Rwanda, Kenya & Tanzania), is a home to an estimated **109.2 Million** cattle, and cattle population is increasing.

Farmers understand use of improved forages (Tekalign, 2014),
- Results in increased productivity
- Access to such material at affordable prices is a concern.

For example - Ethiopian Livestock Masterplan (2014),
- Estimated forage seed demand quantity within the country 2,200 tons
- Projected to increase by about **300%** by the year 2020.

Opportunity exists to double production in response to improved nutrition with these effects amplified when considering profitability (Mayberry et al., 2017).
High number of livestock keepers (millions)- (Steinfeld et al. 2006).

- Uganda 5.7
- Kenya 5.9
- Rwanda 2.1
- Tanzania 8.3
- Ethiopia 15

Successful farmers’ experience - achieve convincing results with the forages:

- demand for such species is likely to grow.
- Awareness creation for such forages grasses would be key.

Empowering livestock keepers – required information i.e. awareness creation - multiple avenues

- demonstration plots,
- media,
- field-days.
Challenges

Usually, farmers lack information and technical knowledge on how to access and grow (Franzel, 2014), and how to feed the animals appropriately.

Exploring forage seed business models is important - locally produced or through importation.

Lack of forages promotions – suitable in different systems and agro-ecologies. Weak or non-existent institutional linkages

Weak forage seed value chain. Inadequate forage seed research, lack of reliable forage seed production, processing and distribution schemes, poorly developed seed marketing systems and limited involvement of private seed
Producer–consumer linkages that would otherwise contribute to commodity flow connecting to the market for sustainability are lacking.

Although both formal and informal sectors are at play, with the informal involving farmers who grow forage seeds, there is a general lack of certified seeds and technology.

Some forage seeds require extra care especially during establishment.

If not addressed properly viability can be a constraint – i.e. low germination rates.
Worldwide, the global forage seed market has been growing. In 2014, the seed market was estimated at USD 10,789 million expected to reach about USD 17,508 million by 2020 (Transparency, 2015).

This reflects the importance they serve in the production of milk and meat for the global human population projected to reach about 9 billion by 2050 (World Bank, 2014).

It is likely, that the forage seed demand in eastern Africa will grow over time driven by the livestock revolution - increase in demand for animal source foods.

The human population in SSA has been increasing steadily at ≈3% (World Bank, 2014) and by 2016 had reached a billion. In addition, cattle numbers have also been increasing implying more forage requirements.
Market for East and Southern Africa (COMESA) initiative on harmonizing seed trade across the region, to increase efficiency and supply market needs (Mukuka, 2014) is a step likely to boost forage seed adoption.

Seed development and distribution infrastructure are essential for the success in the use of quality productive forages (Makkar, 2016), in eastern Africa this requires attention.

Fodder markets emerging: farmers growing forage for sale targeting intensified systems.
Conclusions

Evidence of improved animal performance would contribute to forage uptake and increased forage seed demand.

The private sector get engaged if there are financial returns from forage seeds. However, not all seeds are likely to have the same business potential.

It is likely that both formal and informal approaches would remain functional and has the advantage of synergizing as some seeds have been found not to be profitable to companies.

The rise in demand for animal products in SSA will most likely lead to increased forage cultivation coupled with rising in demand for forage seeds in eastern Africa.

Facilitative policy on seed movement across countries in the eastern Africa will bolster forage adoption.

Grasses that form the basal diet are likely to trade in large volumes compared to legumes that are for supplementation. Opportunities that exist include the development of productive forage technologies coupled with awareness creation.