Salient considerations to address forage seeds access and use in eastern Africa

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INTRODUCTION

- Literature is replete with information, rightfully showing limitation of quality and quantity of feeds on livestock productivity in eastern Africa.
- So far limited forage cultivation (Fuglie et al., 2021) occurs in mixed systems, while the pastoral areas rely largely on native/naturalized grasses with limited conservation foresight.
- Combined forage cultivation in Ethiopia, Tanzania, Kenya, Uganda, Rwanda, and Burundi is estimated at 1,523,722 ha that contrasts with 8,900,000 ha for Colombia alone. (Fuglie et al., 2021).
- Lack of forage seeds and limited access, coupled with low willingness to pay (Osiemo et al., 2024) could potentially benefit from seed production in the continent that could lower cost of seeds compared to imported seeds.

METHODOLOGY

- Literature review - journal papers, Livestock Master Plans, reports and distilled governments plans and efforts to address the low livestock productivity.
- **Keywords:** forages, seed systems, livestock productivity, feed gap, Eastern and Southern Africa.
- We synthesized and derived metrics including feed deficit dry matter t/ha where applicable and converted to estimated forage seed requirement to bridge the annual feed deficit in the region.

RESULTS

Table 1. Annual ruminant feed demand based on population and the equivalent tropical livestock unit (TLU ~ 250 kg) and the animal requirements for body maintenance, growth, production, and reproduction.

COUNTRY	RUMINANT POPULATION*	TROPICAL LIVESTOCK UNIT (TLU)	PERCENTAGE (%) DRY MATTER DEFICIT (DM)	ANNUAL FEED DEMAND (Dry matter tons/year)	FEED DEFICIT (Dry matter tons/year)
Ethiopia	156,968,403	64,524,901	21.6	176,636,917	38,153,574
Tanzania	66,900,000	27,030,000	72.3	73,994,625	53,498,114
Kenya	69,481,459	23,455,030	60	64,208,146	38,524,888
Uganda	32,461,107	12,126,138	13	33,195,303	4,315,389
Rwanda	4,758,591	1,199,288	42	3,283,051	1,378,881
Burundi	2,673,929	621,211	35	1,755,316	614,361

*Ruminants considered include cattle sheep, goats, camel. 1 Tropical Livestock Unit =250 kg Live weight.

To demonstrate the amount of forage seeds that would be required to bridge the dry matter shortfall in the target countries we selected two forage grasses and two forage legumes.

Table 2. Selected agronomic attributes of *Brachiaria*, *Panicum*, *Lablab purpureus* and *Vigna unguiculata* forages.

FORAGES SPECIES	GROWTH TYPE	SEED-RATE (kg/ha)	DAYS TO FIRST CUT (perennials)	DAYS TO REGROWTH CUTTING (perennials)	DAYS TO CUTTING AFTER SOWING (annuals)	POTENTIAL YIELD (t/ha/year)
***Urochloa*-(hybrid)**	Perennial	8	90	30-45	–	17
Megathyrsus maximus	Perennial	3	75-90	30-45	–	20
Lablab purpureus	Annual	20	–	–	90	8
Vigna unguiculata	Annual	20	–	–	70-90	8

Depending on the selected forages attributes, we estimated the seed requirements (Table 3) that would be required to cultivate and produce roughages capable to offsetting the roughage deficit for the livestock population in the countries in the study.

In total ~ 22,600 tonnes would be needed and the countries contributing in the order Tanzania >Kenya ≈ Ethiopia > Uganda >Rwanda >Burundi.

Table 3. Estimated forage seed required (tonnes) to bridge roughage dry matter gap in Ethiopia, Tanzania, Kenya, Uganda, Rwanda, and Burundi using selected forages.

COUNTRY	FORAGES	*AFSR FORAGES GROWN SIMULTANEOUSLY A (TONNES)
ETHIOPIA	*Megathyrsus maximus*	462.7
	Urochloa Hybrid	1451.6
	Vigna unguiculata	2203.4
	Lablab purpureus	2203.4
	Sub-total	6321.1
TANZANIA	*Megathyrsus maximus*	648.8
	Urochloa Hybrid	2035.4
	Vigna unguiculata	3089.5
	Lablab purpureus	3089.5
	Sub-total	8863.3
KENYA	*Megathyrsus maximus*	467.2
	Urochloa Hybrid	1465.8
	Vigna unguiculata	2224.8
	Lablab purpureus	2224.8
	Sub-total	6382.6
UGANDA	*Megathyrsus maximus*	52.3
	Urochloa Hybrid	164.2
	Vigna unguiculata	249.2
	Lablab purpureus	249.2
	Sub-total	715.0
RWANDA	*Megathyrsus maximus*	16.7
	Urochloa Hybrid	52.5
	Vigna unguiculata	79.6
	Lablab purpureus	79.6
	Sub-total	228.4
BURUNDI	*Megathyrsus maximus*	7.5
	Urochloa Hybrid	23.4
	Vigna unguiculata	35.5
	Lablab purpureus	35.5
	Sub-total	101.8
	Total	**22,612.13**

*AFSR =Annual Forage Seed Requirement; a when 100% of annual cultivated forage deficit met in the first year by growing simultaneously the two grasses @ 35% each grass species and 15% the two legumes.

DISCUSSION & CONCLUSIONS

- With the proposition of >22,000 tonnes of forage seeds requirement could only be pragmatic if the seeds are available, accessible, and affordable.
- While forage producers may use vegetative propagation, it becomes prohibitive due to heavy labor requirements in addition to transportation that may be required and especially where substantial land is to be established.
- Using regional trade blocks in Africa COMESA, EAC, IGAD, SADC to hasten forage registration would be preferable.

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ACKNOWLEDGEMENTS

This work was conducted as part of the One CGIAR Initiatives on Livestock and Climate (L&C) and Sustainable Animal Systems (SAPLING). We thank all donors who globally support our work through their contributions to the CGIAR System.

Alianza Bioversity & CIAT · CGIAR Initiative on Livestock and Climate · CGIAR Initiative on Sustainable Animal Productivity

POSTER PREPARED FOR
Tropentag 2024
September 11–13, 2024
Vienna (Austria)