

FORAGE SEED SYSTEMS IN KENYA

2020 report



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Introduction

In Kenya, livestock sector plays a critical role in the economy contributing to income, jobs and food security. The livestock sector contributes to 12% of the GDP with dairy sector which has been growing at a rate of 4% contributing to 4-8% of the GDP (USAID, 2015; Bebe et al., 2017). About 80% of the milk produced in Kenya is produced by smallholder farmers offering livelihood to about 1.8 million people across the value chain. The dairy sector's growth is hampered by high cost of milk production, which is largely related to low quality of feed and fodder, and the lack of year-round availability of quality forages.

In Kenya, most forages contributing to animal diets include tropical grasses supplemented by legumes and crop residues (NEADAP 2019). Recent survey by NEADAP indicated that the most common fodder species used by dairy farmers in a zero grazing system include Napier grass (33%) Rhodes grass (21%), Maize 17% and Lucerne(8%). All the other species rated below 2%. Napier grass is the most commonly used fodder under zero grazing and according to KALRO, of all the forages used by smallholders, 70% is Napier grass. The most commonly grown Napier grass varieties include: Bana grass, Clone 13, French Cameroon, Kakamega 1, 2 and 3, Ouma and South Africa. The varieties Kakamega and Ouma, developed by KALRO, are resistant to smut-and-stunt disease. Trading in fodder is common both in formal and informal sectors. The formal segment is dominated by commercial producers, who trade in hay and recently baled silages while the informal segment includes even the localized trading of fresh fodder (e.g. Napier grass) between one farmer and the other. Hay (Rhodes grass) and Lucerne are the most commonly traded, with Napier dominating the localized sales between farmers within close proximity (Perfometer, 2013)

Availability of forage seeds and planting materials at farm level still remains low and this could explain why forage development is still low. However, there have been efforts to promote other species as an alternative to Napier grass. Forage seed production includes (i) formal channel regulated by KEPHIS and licensed private companies. Completion of the registration process takes 2 – 3 years and costs US\$ 3,000/variety (Sikinyi, 2010). (ii) informal on-farm reproduction and channels for sharing of seeds or planting material. The informal seed system is largely driven by individual farmers, farmer groups, Kenya Agricultural and Livestock Research Organization (KALRO) and Agricultural Training Centres (ATC). Forages propagated vegetative include Napier grass, sweet potato vines, and Kikuyu grass. Seed-producing ones include vetch, lupine, Desmodium, forage trees, and Lablab (NEADAP 2019)

While Kenya have about 20 companies registered to supply certified forage seeds, Only 9 have stocked forage seeds. In addition, only seven companies have forage seed multiplication sites. 16 mainly public organizations (including KALRO and ADC) from many more of their farms dispersed over Kenya reproduce (non-certified) seeds informally. KALRO is a main governmental organization working on forage seeds and plant propagation.

Scarcity and low-quality seed and planting materials therefore possess a huge challenge to forage development which is the backbone of dairy farming. If the dairy sector is to continue on its progressive path, innovations need to fast tracked to keep improving forages and forage sub sector, and link plant science to increase feed efficiency.

Methodology

The information on the forage seed system in Kenya was mainly gathered through a desk study of publication and reports on the subject of forage in Kenya. Additional information was gathered through phone calls and information from website of seed suppliers.

Table 1. Summary of sources contacted

	Company	Location of head office	Contacts
1	Panaar /Elgon kenya	Kaysalt Complex, Mombasa Road Nairobi, Kenya	254 72 8601260
2	Kenya/Simlaw Seeds	Kijana Wamalwa Street, Nairobi Kenya	+254739034729
3	Hygrotech	Tigoni Centre, Limuru Road, Nairobi	+254 722 205 148
4	Western seeds	Kitale, Kenya	+254705505505
5	Amiran Kenya	Old Airport North Road, Nairobi, Kenya	0800720720
6	Royal Seed	Senior Estate, Trans-view Avenue, opposite Portland Club, Athi River	0800720250
7	Coopers Kenya	Mashiara Park, Kaptagat road, off Waiyaki Way, Nairobi	+254734330044
8	Advantage Crops Limited	Got Rabuor Homabay Town Homabay County, Kenya	+254704236777
9	SPEN Youth Group	Meru Town, Meru County	
10	Itiri Farm	Mbwinjeru, Meru County	

Findings

- In a zero grazing farming system, Napier grass remains the most common fodder species, followed by Rhodes grass, maize and Lucerne. However, in a semi intensive system, Rhodes grass is the most common grass followed by star grass and kikuyu grass. Napier grass is still important but competes with Brachiaria grass. In extensive system, natural grassland adopted to specific regions are used. The species changes according to seasons but the most common one is Kikuyu grass followed by Rhodes grass, African foxtail grass and Maasai love grass,
- Kenya has 20 companies in Kenya that supply certified forage seeds. Only nine of them have stocked forage seeds, such as maize, sorghum, Lucerne, Desmodium, oats, Boma & Elmba Rhodes grass, Sudan grass, (sorghum × drummondii), sunflower and Columbus grass (sorghum x Almun parodi). In addition, only seven companies have forage seed multiplication sites.
- 16 mainly public organizations (including KALRO and ADC) from many more of their farms dispersed over Kenya reproduce (non-certified) seeds informally.
- The Kenya Seed Company (and its subsidiary Simlaw Seeds Company) is the main source of certified forage seeds supply and distribution.
- KALRO is a main governmental organization working on forage seeds and plant propagation. Napier grass remains the main focus of KALRO at this moment due to vast acreage of Napier grass in Kenya, but KALRO also developed several Brachiaria cultivars (like Basilisk, Piata, MG4, etc.) which are now available.
- KALRO Lanet and Ol Joro Orok are also working on the supply of protein-based forage seeds such as pink clover, lucerne, lupins, vetch, Calliandra, tree lucerne and Sesbania. KALRO Embu produces and sells green leaf Desmodium, sweet potatoes, Calliandra and Leucaena.

Table 2. Seed Companies in Kenya, Websites and Forage Status

	Name of the company	Website	Forage status
1	Simlaw Seeds Company/Kenya seed	www.kenyaseed.com	Oats, Pasture beet, boma rhodes, elmba rhodes, columbus grass, sudan grass, desmodium and lucerne
2	Coopers Kenya	http://www.coopers.co.ke/	Purple vetch and tree Lucerne
3	Tropical Seeds/Advantage seeds	www.tropseeds.com	Bracharia, Molato, Cayman & cobra
4	Pannar Seed/ Elgon kenya	www.pannar.com	Yellow Maize
5	Hygrotech Kenya	http://www.hygrotech.co.ke/	Soghurm & Lucerne
6	Amiran (K) Ltd	www.amirankenya.com	Bracharia Molato & Cayman
7	Kenya Highland Seed	www.royalseed.biz	Lucerne
8	Leldet Kenya Ltd	-	Forage soghurm
9	East African Seed	www.easeed.com	
10	AgriSeedco. Ltd	www.seedcogroup.com	No forage seeds
11	Freshco Seeds	www.freshcoseeds.co.ke	No forage seeds
12	Western Seed Company	www.westernseedcompany.com	No forage seeds
13	Monsanto (K) Ltd	www.monsanto.com	No forage seeds
14	Syngenta EA Ltd	www.syngenta.com	No forage seeds
15	Savannah Seeds Ltd	www.savannahseeds.com	No forage seeds
16	VetAgro/ Griffatton	http://vetagroinfo.com	No forage seeds
17	Continental Seed Company Ltd	http://continentalseeds.com	No forage seeds
18	Pioneer	www.pioneer.com	No forage seeds
19	Seminis East Africa Ltd	https://seminis.co.za/	No forage seeds
20	Hortitec (K) Ltd		
21	VegFlow		

Table 3. Suppliers of forage seeds against current prices April 2020

	Stockist	Forage stocked		Price Range/kg	Contact
1	Advantage crops/Tropical seeds	Bracharia varieties	Molato II	4600	0704236777
			Cayman	5000	
			Cobra	5500	
2	Pannar Seeds/Elgon Kenya	Yellow Maize		325	0728601260
3	Hygrotech Solutions	Soghurm	Cow Candy	450	0722205148
		Lucerne		2000	
4	Royal Seed	Lucerne		2636	0800720250
5	KALRO – Lanet & Ol Joro Orok	Purple Vetch	<i>Vicia spp</i>	600	
6	KALRO – Ol Joro Orok	Lupin	<i>Lupinus angustifolius</i>	200	
7	Kenya Seeds & Simlaw	Lucerne	<i>Medicago sativa</i>	2,190	0722205144
		Desmodium		5,685	
		Boma Rhodes	<i>Chloris gayana</i>	950	
		Elmba Rhodes	<i>Chloris gayana</i>	950	
		Sudan grass		115	
		Columbus grass		115	
		Bracharia varieties	<i>Molato II</i>	3500	
		Fodder sorghum	<i>Sorghum bicolor</i>	300	
		Maize (silage)		195	
		Sunflower		200	
8	Ikinyukia farmers group (Njabini)	Common vetch	Vetch (<i>Vicia sativa</i>)	2,000	
		Lupin	<i>Lupinus angustifolius</i>	1,000	
		Barley	<i>Hordeum vulgare L</i>	100	
		Sorghum	<i>Sorghum bicolor</i>	1,000	
9	Amiran Kenya	<i>Molato</i>	Brachiaria varieties	5848	0719 095000
		<i>Cayman</i>		6464	
10	Leldet Kenya Ltd	Fodder sorghum	(E6518)	300 (2 kg)	
11	Coopers Kenya	Lucerne		2700/kg	0722209840
		Purple Vetch		1400/kg	
12	SPEN Youth Group	Yellow Maize		350	0712 515 285
		Desmodium		8000	
		Lucerne		5000	
		Calliandra		3000	
		Lupin		1000	
		Tree Lucerne		4000	
		Lucerne		2500	
		Sesbania		3000	
		Boma Rhodes		1000	
Oat		5000			

Table 4 Forage Supplied by former KARI, now KALRO

KARI – LANET	Seed type	Varieties	Sites Multiplied	Preferred altitude(M.
Fodder Sorghum	Forage Sorghum	E6518	Leldet (Chemeron	1,500-2,000
	Feed rationing seeds	BJ-28	Nakuru Nyandarua Kericho, Bomet, Nyeri	1,500-2,000
	Dual purpose Sorghum	Ikinyaruka	same as BJ-28	1,500-2,000
	Dual purpose Sorghum	E1291	same as BJ-28	1,500-2,000
	Dual purpose Sorghum	BM-30	same as BJ-28	1,500-2,000
Legumes	Desmodium	Green leaf	Lanet	
		Silver leaf	Lanet	
	Vetch	Purple		
	Kenya Highland pink clover			
	Sweet potato vines			
	Edible Cana(Tuber)			
Grasses	Napier grass	Kamamega 1, Kakamega 2, Ouma and Bana grass		
Fodder Maize	Yellow maize			
Legumes	Desmodium	Green leaf		
	Sweet Lupin	Albas Kiev mutant Albus angustifolius	KARI	1600 - 2400

Adapted from forage seed survey, SNV 2013.

Summary of challenges facing forage sub sector

Quality

- Lack of information on availability of certified seeds
- Limited access to quality seed and planting material
- Limited access to - and availability of - improved forage seed/plant material.
- Insufficient quantity and quality of forages and pastures.
- Lack of forage development plan on farm level, but also regional (e.g. County) or national
- Limited forage crop options and possibilities for crop rotations.
- Sub-division of land and urban expansion.
- Climate change.
- Low level of mechanisation at different scale of farming systems

Animal – environment interaction

- Mismatch between policies of Government departments for “breeding” and “feeding”.
- Low feed efficiency/high feeding cost due to low quality forage and unbalanced rations.
- Inefficient forage utilisation (low Feed Efficiency) due to poor quality.
- Weak links between agronomy of forages and animal nutrition.

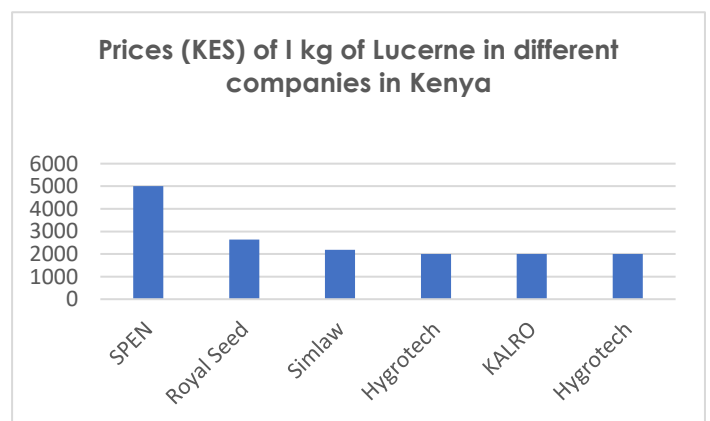
Knowledge exchange

- Seasonality of forage production (highly rain dependent) and lack of fodder plan.
- Inefficient forage preservation (and ineffective).
- Use of very low digestible forages.
- Low quality forage on farms and in the market.
- Absence of reliable forage & feed testing facilities.
- Lack of evaluation of feed cost and pricing based on nutritional value, trading standards not based on quality indicators (DM, ME, CP).
- Low skills/education level on forage production and preservation.
- Weak links between health, food safety and feed safety.

Discussion.

The increasing demand for livestock products fueled by increasing population and migration to urban centers has increased interest and demand for high quality fodder sources. While this study has not focused on quantifying volume of fodder available in the market, it is obvious that farmers depend on tropical grasses, legumes and crop residues to supply animals' diets. However only 9 out of 20 registered companies' stock certified fodder seeds explaining the low awareness of availability of certified seeds. The informal seed multiplication and distribution will continue to play a crucial role in making fodder seeds and other planting materials available to farmers.

There is a direct relationship between the price of forage seed and adoption of these plant by farmers. Protein rich-fodder seeds were more expensive in relation to their energy-based counterparts. This was also reflected in supply where higher prices were evident in the seeds least supplied. For example, one kilogram of Lucerne seed costs between Kes 2000 and Kes 5000 compare to one kilo of fodder maize that costs average of Kes 200. Napier grass, sorghum, Boma Rhodes seeds are even cheaper and this could explain a reason why awareness of these crops is high, in addition to the fact that they form bulk of cow's diet.



Conclusion

- Improved new forage seeds need to be developed and tested locally with local farmers to improve available species.
- To improve quality, emphasis should be on good management practices that focus on nutritive value of fodder being used and not on volumes

References

- J. J. H. M. Creemers, A. Alvarez Aranguiz, 2019; White Paper Pathways to Intensify Sustainable Forage Production in Kenya.
- Tegemeo Working Paper 43. Tegemeo Institute of Agricultural Policy and Development, Nairobi, USAID-KAVES, 2017 Fodder value chain analysis.
- S.M Mwendia, An Maria Omer Notenbaert, Birthe Katharina Paul, 2016 Forage seed systems in Kenya
- SNV 2013; Fodder seeds survey
- CIAT, 2018. Online website tropical forages https://apps.lucidcentral.org/tropical_forages
- J. J. H. M. Creemers, A. Alvarez Aranguiz, 2019; Quick Scan of Kenya's Forage Sub-Sector
- SNV Kenya, 2013; Study on the Kenyan Animal Feed and Fodder Sub-sectors sub report 3.