

Research Application Summary

**Grass seed value chain analysis in the Southern Kenya range lands of  
Makueni and Kajiado counties**

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**Abstract**

Fodder production has increasingly become important among pastoral and agro-pastoral communities in Kenya. A number of pasture production technologies have been introduced to these communities not only to enhance availability of livestock feeds in dry periods but also to boost their income from sale of hay and grass seed. Only scanty information has been documented regarding production and marketing practices. This study was conducted in Makueni and Kajiado Counties located in the southern drylands of Kenya with the aim of mapping the grass seed value chain. The study shows that all the farmers who have adopted these technologies use own land. In addition, 93.90%, 90.8% and 67.86% use own labor, fencing materials (live fences) and seed, respectively. This dependence on locally/free available inputs indicates that commercialization of pasture and seed production is low in these districts. Of the farmers that produce pastures, 31.3% have embraced grass seed production. In the last one year (ending June 2016) farmers other than the few private commercial producers harvested an average of 127 bales of hay and 58.17 kgs of grass, of which 37.80% and 70.90% were sold, respectively. Pasture (hay) was mainly sold to consumers within the Counties, while grass seed was sold to neighboring farmers or NGOs through brokers, individual seed bulkers or farmer groups. The grass seed markets are still informal. There are no government regulations governing grass seed marketing activities except for seed quality regulations which only restrict seed marketing beyond the Counties. This study recommends legalization and development of properly enabling institutional structures that will let producers access government services on seed standardization and quality assurance. This will in turn allow them fetch high grass seed prices offered elsewhere. Legal structure and policies of this sector will too need to facilitate private investment towards providing lacking services like mechanized ploughing and harvesting.

Key words: Agro-pastoral livelihoods, drylands of Kenya, fodder value chain, and pastoral

## Résumé

La production fourragère est devenue de plus en plus importante parmi les communautés pastorales et agro-pastorales au Kenya. Un certain nombre de technologies de production de fourrages ont été introduites dans ces communautés non seulement pour améliorer la disponibilité des aliments pour bétail pendant les périodes de sécheresse, mais aussi pour augmenter les revenus de ces communautés par la vente de foin et de semences de graminées. Seules quelques rares informations ont été documentées sur les pratiques de production et de commercialisation. Cette étude a été menée dans les comtés de Makueni et de Kajiado situés dans les zones arides du sud du Kenya, dans le but de cartographier la chaîne de valeur des semences de graminées. L'étude montre que tous les agriculteurs qui ont adopté ces technologies utilisent leurs propres terres. En outre, 93,90%, 90,8% et 67,86% utilisent respectivement la main-d'œuvre, les clôtures (clôtures vivantes) et les semences. Cette dépendance à l'égard des intrants gratuits/ disponibles localement indique que la commercialisation de fourrages et la production de semences sont faibles dans ces districts. Des agriculteurs qui produisent des fourrages, 31,3% ont adopté la production de semences de graminées. Au cours de la dernière année (fin juin 2016), les agriculteurs autres que les quelques producteurs commerciaux privés ont récolté en moyenne 127 balles de foin et 58,17 kg de fourrages, dont 37,80% et 70,90% ont été respectivement vendus. Les fourrages (foin) étaient principalement vendus aux consommateurs à l'intérieur des comtés, tandis que les semences des graminées sont vendues aux agriculteurs voisins ou aux ONG par le biais de courtiers, de collecteurs individuels de semences de graminées ou des groupes d'agriculteurs. Les marchés de semences de graminées sont encore informels. Il n'existe pas de réglementation gouvernementale régissant les activités de commercialisation des semences de graminées, à l'exception des règlements sur la qualité des semences qui limitent la commercialisation des semences au-delà des comtés. Cette étude préconise la légalisation et le développement de structures institutionnelles propices à l'accès aux services gouvernementaux pour la normalisation des semences et l'assurance de la qualité. Cela permettra s'améliorer le prix de vente de semences de graminées existant sur le marché extérieur. La structure juridique et les politiques de ce secteur devront également faciliter l'investissement du secteur privé en vue de fournir des services comme le labour mécanisé et la récolte.

Mots clés: moyens de subsistance des agro-pastoraux, zones sèches du Kenya, chaîne de valeur fourragère et pastorale

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## Background

Pastoral and agro-pastoral communities inhabiting the drylands of Kenya depend primarily on livestock production as their main source of livelihood. However, quick succession of droughts that lead to pasture scarcity and death of livestock currently make it difficult for these communities to recover following such shocks. This has been exacerbated by increasing climate variability that is expected to be more unpredictable and severe in the future (IPCC, 2014) thereby further undermining the resilience of

pastoral environments and livelihoods. Overall, droughts have led to massive loss of pastureland and critical watering points, rendering most of the traditional drought evasion strategies ineffective. The resulting consequences include decline in livestock feeds and malnutrition hence increased livestock mortalities. This translates into weak and unstable household livelihoods, increased food insecurity as well as vulnerable economic sectors (Lugusa *et al.*, 2016).

Various pasture production technologies have been introduced to the communities living in these drylands with the aim of augmenting livestock feed availability during the dry periods in addition to diversifying income through the sale of pasture and grass seed. Some of these technologies include natural pasture improvement, range pasture establishment and pasture seed production (Kidake *et al.*, 2016). However, due to information paucity, fodder production in the drylands has not been fully understood in terms of existing fodder (hay) and grass seed value chain. This study was therefore aimed at analyzing the fodder and grass seed value chain in Makueni and Kajiado Counties.

### **Literature Review**

Low external input livestock production is the dominant economic activity practiced by the pastoral or agro-pastoral communities in the vast drylands of Kenya (MacOpiyo *et al.*, 2013). However, there are significant changes in the climatic conditions, and physiographic factors as well as socio-economic changes in pastoral areas such as population growth and sub-division of communal lands into smaller enclosures (Wasonga, 2009). These changes have led to loss of grazing land, resulting into declining availability and quality of fodder for livestock in the drylands. Pasture scarcity arising from the frequent droughts has not only led to increasingly poor pastoral households due to livestock mortality and declining productivity but also triggered conflicts over the declining resources.

Fodder production and conservation has been notably regarded as such lasting approach for augmenting households' nutritional status through enhancing stability of livestock production (Catherine *et al.*, 2014). Fodder cropping also provides surplus feeds to dairy animals and with the increasing peri-urban livestock production in Kenya, the demand for fodder is on the rise. This is evident in Kajiado County where dairy production as a business has been reported to be greatly profitable (MacOpiyo *et al.*, 2013). In Baringo County, pastoral communities have been practicing fodder production through enclosures initially meant to cushion households against forage scarcity during dry spell but now practiced as source of income as well (Lugusa *et al.*, 2016). A number of studies have been conducted on fodder production especially through enclosures in West Pokot and Baringo Counties (Wairore *et al.*, 2015). However, little work has been done in the southern Kenya rangelands, with minimal attention put towards analyzing fodder and grass seed value chain in the study area.

### Description of the study

This study was conducted in Kajiado and Makueni Counties which are located in the southern parts of Kenya and are classified as arid and semi-arid lands. Makueni is predominantly agro-pastoral, while Kajiado is pastoral, with livestock production being the main source of livelihood in both Counties. The two counties experience bimodal rainfall patterns with long rains occurring between March and May, while short rains are experienced from October to December. Over the years, fodder production has been promoted among the pastoral and agro-pastoral households living in the two Counties as a strategic measure for enhancing households' resilience to climatic extremes, chiefly droughts.

A baseline survey was conducted to define the sample size. The study area was stratified into agro-pastoral (Makueni County) and pastoral (Kajiado County). The study population was drawn from three selected locations per stratum in which farmers had been sensitized, trained and facilitated to start fodder production through the Agricultural Research Supports Program phase two (ARSP-II) initiated by KALRO and other partners. Both purposive and random sampling were used to select respondents. Focus group discussions (FGDs) with farmers and key informant interviews (KIIs) with farmers, traders, government and NGO officers were used to identify fodder practices by farmers, actors and their roles in the fodder value chain. Semi-structured questionnaire was used to gather household data on sources of inputs, hay and grass seed production practices as well as marketing outlets and activities. A total of 216 household interviews, 11 FGDs and 38 KIIs were conducted. The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) and the Value Chain Analysis (VCA) software version 2013 to generate descriptive statistics. The information on various production practices adopted, input sources as well as marketing outlets were summarized in form of averages, frequency tables, charts and graphs. The Food and Agriculture Organization (FAO) value chain analytical framework was employed to conduct functional analysis in order to characterize fodder chain actors, their interactions as well as the physical movement of fodder along the chain.

#### Proportion of farmers who have adopted fodder and seed production technologies

Adoption	Fodder production (n=216) Proportion (%)	Seed production (n=131) Proportion (%)
Adopters	60.6	31.3
Non-adopters	39.4	68.7

### Results and discussions

Key players in the grass seed value chain in the study area include livestock keepers, government departments particularly Kenya Agricultural and Livestock Research Organization (KALRO), farmer groups and NGOs (Figure 1). Apart from a few private commercial producers, there is low commercialization of both hay and grass seed

production among livestock farmers in the study as indicated by high dependence level on free basic inputs. The study noted that 93.90% and 90.8% of farmers depend on own labor and fencing materials (live fences) respectively. Grass seed harvested from naturally growing grasses on the farm is the dominant source of seed for reseeded (67.86%) followed by KALRO (21.43%). Other seed sources include NGOs and other farmers/ farmer groups (Fig. 2). On average, 157 bales of hay was produced the previous year of which 37.8% was sold to other livestock keepers within the County. A smaller portion (29.1%) of harvested grass seed was used for further reseeded while 70.9% was sold mainly to NGOs, other farmers and seed bulker/ brokers. The results further point out that pasture producers do not embrace leasing of pasture due to adverse effects of poor grazing practices. However, 10.7% of these farmers prefer leasing as they consider it cheaper and does not require any labor. Grass seed prices greatly vary between Ksh 150 to Ksh 800 per kg while that of a bale is between Ksh 100 and 300 depending on various factors including seed quality, season, species as well as social factors (Fig. 3).

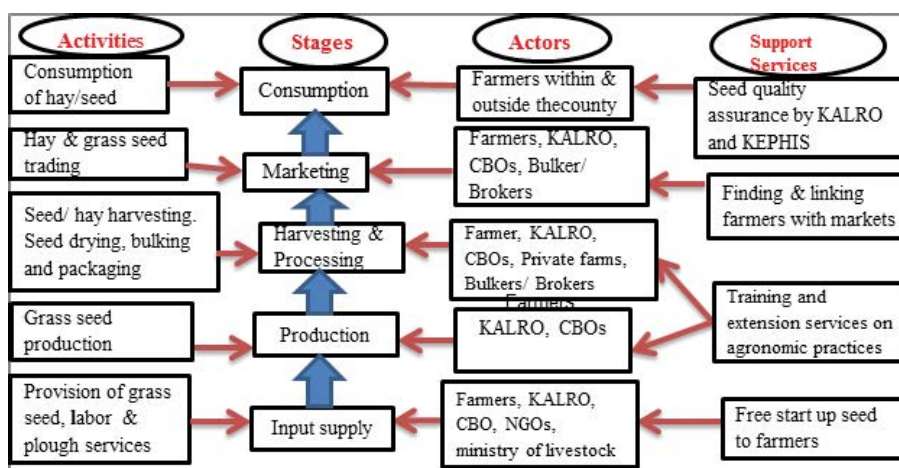


Figure 1: Grass seed value chain map for Makueni and Kajiado Counties

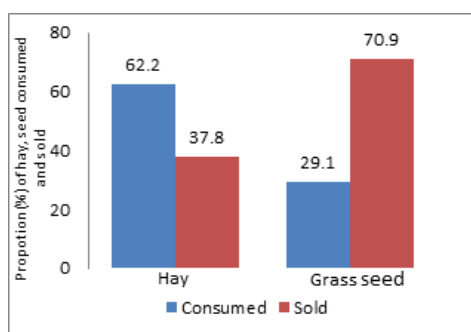


Figure 2: Sources of grass seed used for reseeded

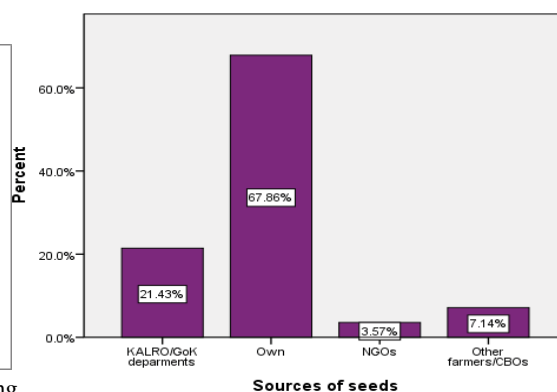
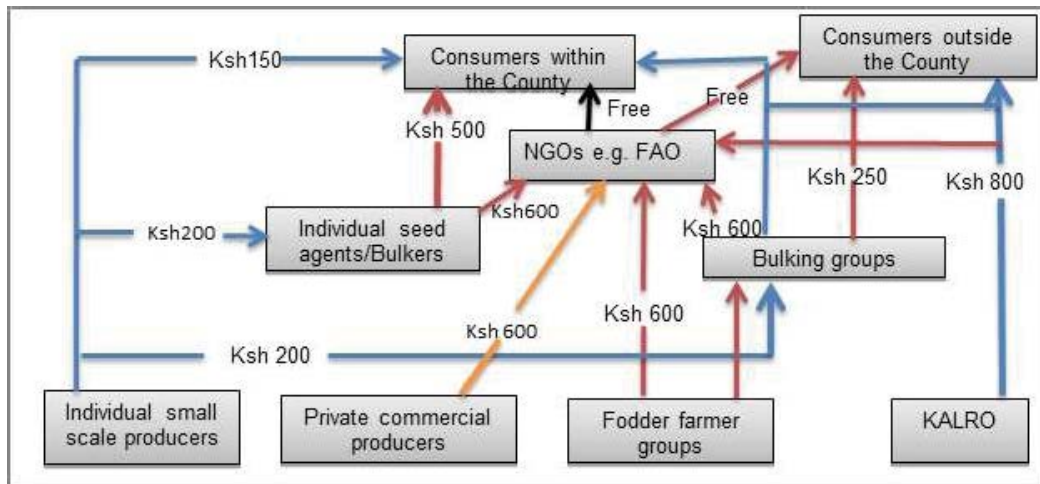


Figure 3: Proportion of hay and grass seed consumed and sold out of average of 127 bales and 58.17 kg of seed produced last year

The informal nature of the market and seed quality control and standardization restrictions limit marketability of the seeds (Lugusa *et al.*, 2016). These markets therefore need to be formalized with proper structure and policies that do not only open them up but also encourage private investment in providing missing services such as mechanized harvesting.



**Figure 4:** Grass seed marketing channels and prices/kg at each nodes of the chain (1 USD = Ksh 100)

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