ASSESSING THE ROLE AND EFFECTIVENESS OF STOCKISTS ALONG THE FORAGE SEED SUPPLY CHAIN IN KENYA

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ABSTRACT

Pasture/forage development in Kenya is highly dependent on reliable seed supply. Therefore, increasing utilization improved forage seed is hypothesized to significantly improve dairy productivity in Kenya. Seed stockists among other actors along the supply chain play a key role in seed supply to farmers. However, there was limited information on forage seed marketing at stockists level. This study examined the role and effectiveness of forage seed stockists and also identified constraints hampering efficient and effective distribution of seeds to farmers. Generating information was perceived to increase the delivery of improved forage seeds to farmers. A market survey was carried in 2009 in Bungoma, Uasin Gishu and Trans Nzoia counties using a pre-tested semi-structured questionnaire. A sample of 42 stockists was selected in Bungoma (three towns), Uasin Gishu (two towns) and Trans Nzoia (three towns) counties. The stockists were randomly selected using linear sytetamic sampling technique after establishing a sample by listing the stockists in each town. Descriptive statistics were used in the data analysis. Results revealed that quantities of forage seeds supplied to stockists were low because the farmers' demand was also very low. Few stockists stocked pasture seeds. In addition the results revealed that promotion of the forage seeds was weak unlike maize seeds. These contributed to poor performance of the forage seed industry. Despite the facts that there was no repackaging of the seeds, smaller packages were sold more than the bigger ones. We conclude that forage seed promotion and efficient packaging and stocking in accordance with farmers' package size preferences increase demand for the inputs.

Keywords: Pasture seed, market, stockists, package

INTRODUCTION

Feed shortages and the poor quality of available feed are the major constraints to increased livestock productivity in sub-Saharan Africa (ILCA., 1994). Pasture/forage development that supplies the bulky of livestock feed in Kenya is highly dependent on reliable seed supply. Therefore, increasing utilization improved forage seed is hypothesized to significantly improve dairy productivity in Kenya. Seed stockists among other actors along the supply chain play a key role in seed supply to farmers. However, there is limited information on forage seed marketing at stockists level. Forage/pasture seed constitutes an important input in livestock industry. Without sufficient seed supply, it would be difficult to develop a stable agricultural system for enhanced food security and income generation (Agwu *et al.*, 2008; Asongwed-Awa and Njoya, 2002; Omonona, 2006). Reliable supply of good quality and quantity feeds is crucial in dairy farming in Kenya given that majority of household depend on enterprise. Seed system is divided in three components: technological, economic, and legal. The technological component has to do with forage variety selection; the economic one involves production and marketing and the legal component has to do with the rules and regulations governing the previous two aspects. This study concerns the marketing component with focus role of stockists on seed supply chain.

The research-extension-farmer-seed system plays key role in adoption of forage/pasture technologies and subsequently the performance of the agricultural sector. Sustained use of agricultural technologies is dependent on an efficient input and output markets. Farmers may resist investing in new and more productive technologies and this constrain commercialization of agriculture as advocated in Vision 2030 and Agricultural Sector Development Strategy (Republic of Kenya, 2010; Republic of Kenya., 2005; Republic of Kenya., 2007). In Kenya and most of other developing countries, an effective strategy for dealing with market-related policy issues that can help improve marketing has been put in place (Republic of Kenya., 2010). The liberalization of markets in Kenya have led to an influx of private stockists and new products like those of pasture seed in the market (Republic of Kenya., 2004a; Republic of Kenya., 2004c). However, in most cases actions of most

governments are usually based on conventional, rather than empirical and analytical knowledge about the marketing systems. In Kenya, there is a shortage of good data of the forage/pasture seed systems, so most agricultural research work and policies are poorly implemented. For example there is limited information on stockists involved in forage seed marketing. The objectives of this study were therefore to analyze the availability and constraints of forage seed marketing by stockists. This is aimed at improving the delivery of seeds to farmers. The general objective of this paper is to examine the performance of forage seed actors along the value chain system in west Kenya. The specific objectives are to; examine the socio-economic characteristics of stockists in the study area, to analyze the performance of forage seed at stockists level and identify constraints at this level aimed at improving the delivery of the seed to farmers as well as identify the determinants of quantities of forage seeds sold.

Because the delivery of forage seeds to farmers by stockists is a necessary pre-requisite in understanding the constraint along the dairy value chain and the dimensions of food security, poverty and in focusing policy formulation towards reduction of poverty among farm households, a study as this is important. The study will not only provide empirical measures of quantities of forage/pasture distribution system in relation to infrastructure availability but will also highlight and identify constraints for the same. The study also stands to benefit the country in the drive to ensuring self-sufficiency in food production, through improved forage production as it will identify those variables (areas) that require urgent attention by the various stakeholders in the agricultural sub-sector which is the only hope of the rural poor.

METHODOLOGY

Conceptual Framework for Agricultural Market Development

In this framework, market development is induced by national or regional changes in institutions, policies, infrastructure, prices and agricultural technologies. In Livestock production system, these changes are conditioned by presence of appropriate and high yielding forage technologies, seasonal finance for purchased inputs, infrastructure to support input, output and financial markets, and local markets offering stable output prices. Local markets offering stable output prices provide reasonable returns to investments in improved technologies. The levels of economic activity may be induced by investments of private traders, transaction costs and risks, which in turn inhibit or foster access to markets and market development. Market development is induced by many factors operating at different levels (household, village, regional, national). Many of these factors induce market development directly or indirectly; for example, poor infrastructure development in the rural areas may present highly risky and unattractive investment opportunities for private traders.

Sampling Framework

This study involved a survey of stockists carried out in 2009 in three counties of western Kenya. The research team consisted of researchers from the Kenya Agricultural Research Institute and extension officers from the Ministry of Agriculture (MOA). Lists of licensed stockists provided by the MOA staff were used as sampling frames, from which stockists were randomly selected. A sample size of 42 (Bungoma-three towns, Uasin Gishu -two towns and Trans Nzoia- three towns) counties) were randomly selected using linear systematic sampling technique (Ostle, 1954). Two seed companies situated in northwest Kenya who were producing forage/pasture seeds were purposively selected for interview. Ppre-tested semi-structured questionnaire was administered to the respondents. The survey focused on collection of relevant information by interview and structured questionnaires. Data were collected based on stockists' records and memory recall. Supplementary information was also collected from seed companies that were involved in pasture seed production. The two seed companies were interviewed and since they were the only one in the region all of them were sampled for interview. In the input stockist survey, data was collected on; purchases and sales of forage seed, sources for financing purchased forage seeds and services provided to farmers, (iv) availability of

TABLE I- DISTRIBUTION OF SAMPLED STOCKISTS IN STUDY REGION

	Frequency	Percent
Bungoma	2	5
Burnt forest	3	7
Eldoret	8	19
Kamukuywa	4	10
Kimilili	3	7
Kiminini	5	12
Kitale	16	38
Ngeria Junction	1	2
Total	42	100

credit; annual sales of seed forage seed by type and package size; pricing; distribution input stockists and constraints.

Data analysis

The data were compiled, processed and analyzed by descriptive statistics. The statistics used include proportions, frequencies, mean, standard deviation and standard errors.

RESULTS AND DISCUSSION

Public Seed production by companies

Figure 1 shows the seed supply chain from seed companies through stockiss to farmers who are the ultimate beneficiaries. This study looked the role and effectiveness of the stockists along the supply chain. More stockists were found to have joined the seed trade over years particularly in relation to pre and post market liberalization period. Table 2 shows some of the pasture seeds produced and distribute by two seed companies in North rift region. This gives an indication of the supply chain of the pasture/forage seeds that stockists got within the period. The demand of seeds produced increased year by year. This trend clearly shows that the amount of seeds produced by seed companies is relatively small compared to other cereal crops like maize and wheat. This could be attributed to the low demand by the farmers. In addition the seed are not bought every year and seed companies do not make more profit as farmers buy only once. However, given the increasing demand of hay from pastures the demand for ley pastures may increase with time.

Stockists

General characteristics of stockists

The socio-economic characteristics of input stockists in the study area are presented in Table 3. The results showed that 62% of the input stockists interviewed were male while 38% were females. Out of 42 stockists interviewed about 33% sold forage seeds. Almost all the stockists, were permanently engaged in the sale of agricultural inputs by selling inputs throughout the year. The stockists indicated that the business they were engaged in more than one occupation in addition to being a shopkeeper. Most of the stockists (>90%) across all the gender groups had education level above secondary. In addition the survey also revealed that most of them had had at least business training. The number of people employed by each stockist ranged from about 4 for female stockists and 5 for male stockists with an average of 4 for the whole sample size. The majority of respondents (59%) were involved in both retail and wholesale stockists while only 9% were mainly dealing in wholesaling. About 52% of the stockist interviewed owned the business premises (Fig 2).

Lack of specialization in business was also manifestation in diversification in the sell assorted items in the shops input markets in Kenya. The low forage seed sales make market forces for input traders to be involved in more than one activity.

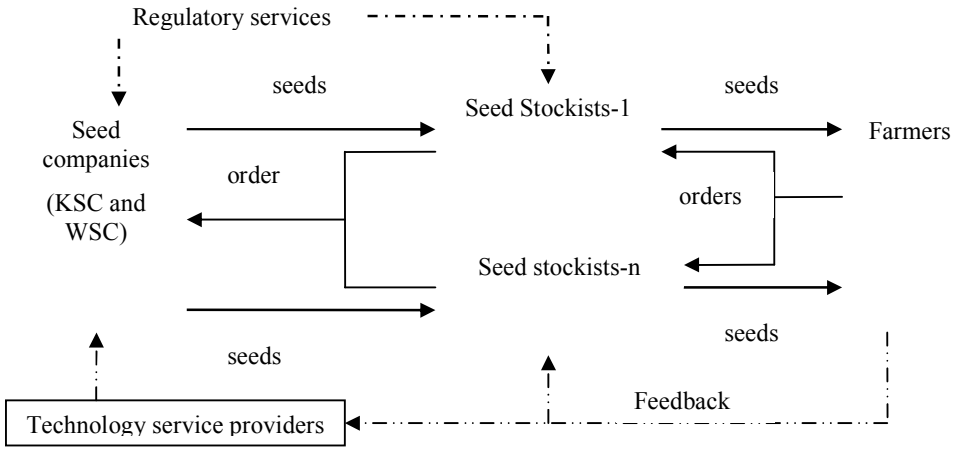

Figure 1: Distribution channel for the seed company

TABLE II - FORAGE SEED PRODUCTION BY SEED COMPANIES IN WEST KENYA

	Year			2009	2008	2007	2006	2005
Western seed company (WSC)	Desmodium		Acr.		40	30	20	10
			Amount-kg	400	400	200	200	100
	Boma	Rhodes	Acr.	852.9	495.9	558.01	498	0
			Amount-kg	593330	25428	41120	14370	1593
Kenya seed company (KSC)	Colored	guinea	Acr.			40	40	
			Amount-kg	2200	212	5932	5174	1910
	Soy	beans	Acr.				60	
			Amount-kg				700	1240
	Sudan	grass	Acr.					
			Amount-kg	22600				

TABLE III - GENERAL CHARACTERISTICS OF THE STOCKISTS IN SELECTED TOWNS OF WEST KENYA

Variable	Respondents' sex		All n=42
	Male n=26	Female n=16	
Other occupation(n=42)			
None	6.7	16.7	9.5
Farming	60.0	33.3	52.4
Employed(public/private sector)	20.0	16.7	19.0
Self employed (business)	13.3	33.3	19.0
Education of business owner (n=42)			
Primary	8.3	6.3	7.5
Secondary	29.2	31.3	30.0
Post secondary	62.5	62.5	62.5
Had a training on seed	71	29	58.3
Respondents' age	38	37	38
Years in business	11	9	9.5
Number of years selling inputs	8	8	10
Number of people employed	3.8	4.9	4.1
Type f business			
Retail	57.1	42.9	31.8
Wholesaler	50.0	50.0	9.1
Both retail and wholesale	91.7	8.3	59.1
Ownership of business premises			
Obtained credit for seed business			33

This is because the seed business is seasonal and traders look for supplementary business to sustain their livelihoods. The main types of occupations other than the input trade that stockists were engaged in were: farming crops and livestock, formal employment and other non-agricultural related businesses. Input traders who are engaged in farming would be effective sales people of agricultural inputs because they can identify themselves with their customers, the farmers. Also, since they have the practical experience, they could be effective in advising farmers on the use of inputs.

Non-Forage seed traders

Stockists who were not selling forage seeds were also interviewed to get their perception on input marketing. These non-seed traders were asked whether they had sold forage seeds at one time and about 4% of the respondents indicated that they had sold the seeds at one time but quit the business due to a number of reasons. Some of them had withdrawn from selling the seeds because of little or no pasture seed demand (48%), pasture seed not available (11%), high initial capital investment in seed business (19%), lack of storage in their

premises (11%) and others reasons (7%) while others did not know about forage seed business (4%)

Among the forage seed sold, the commonly stocked forage species were Boma and Elmba Rhodes among the grasses while desmodium was among the herbaceous legumes.

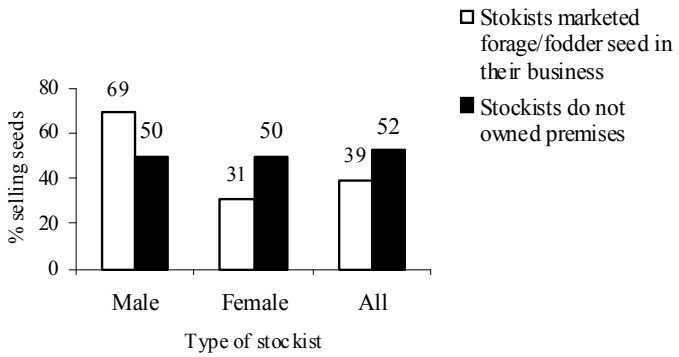

Figure 2: Seed marketing and ownership of premises by gender

Assessing seed supply and distribution

Seed distribution covers the place element in the marketing mix and relates to getting: the right products, in the right mix, in the right quantity, at the right time, in the right place, in the right condition, at the right price, and under the right contractual terms. Therefore, reliable and efficient supply of stocks to the traders significantly contributes to the traders' efficiency. Stoskists who play an important role in marketing mix stocked a variety of forage species as shown in Fig 3.

The traders also indicated that,forage marketing accounted for an insignificant portion of their business sales; incomes, implying that the low volumes of forage seeds were sold by stockists. Because of the low selling of forage seeds, traders spread their risks by diversification into other agricultural and non-agricultural commodities and non-trade related sources. Lack of specialization is also a manifestation of the input markets in west Kenya. The low sales in market make input traders to be involved in selling more than one input types.

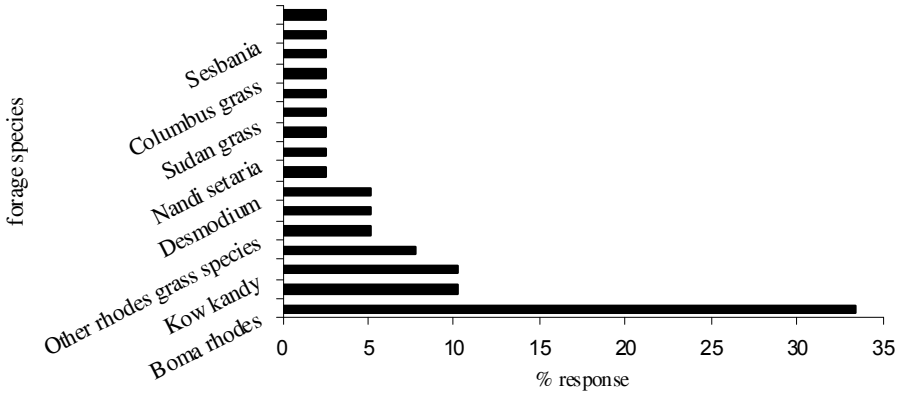

Figure 3. Percent response by stockists stocking different pasture seeds N=39

TABLE III- ANNUAL AMOUNT OF PASTURE/FORAGE SEEDS SUPPLIED PER YEARS PER STOCKISTS 2005-2009 (KG)

Year	n	Mean	SE
2006 (Kg)	14	98.57	41.05
2007 (Kg)	15	98.33	37.72
2008 (Kg)	20	117.8	32.35
2009 (Kg)	21	139.43	41.28

This cushioned the business against low sales of some goods during lean periods.

The annual mean quantities of seeds received per the stockists progressively increased from 99kg to 139kg (Table 3). However, there is great variability in quantities as depicted by high SEs. About 77% of the stockists indicated that the seed suppliers deliver the consignment while only 24% said that they collect the seed themselves

Seed supply Problems

The key problems experienced in acquisition of forage/pasture seed include lack of credit to pay for credit (25%), high seed price (25%), high transportation cost (17%) and low quality seeds (17%). Other stockists indicated that seed sources were far (8%) and unreliable seed supply (8%) (Fig. 4). Agriculture demands different forms of inputs to be productive, among which, credit is indispensable. Yet, providing the sector with adequate credit has been a problem because of the high transaction costs, especially from commercial banks where the bulk of the country's financial resources circulate. Interventions are required to support farmers' access to institutional loans is crucial both during loan origination and collection. (Admasu and Paul, 2010)

Seed packaging

Distribution is the process of moving packaged seed from the stores where it is held following processing and packing to the farmer. This may involve a single step, if sales are made directly to farmers, or a series of steps involving intermediate wholesalers and retailers. Clearly, distribution is a key area of marketing and is a vital part of meeting the customers' needs and requirements. Stockists were asked how they receive and distribute the seed to farmers and other agents downstream. The results revealed that no stockist re-packaged forage/pasture seeds. This was attributed this to the fact that it is not recommended by the government (88%) and farmers would not trust the re-packaging (12%) (Fig 4). The stockists interviewed indicated that they were not repackaging the seeds and the reasons given were as shown in the Table 4a.

Distances between forage seed traders and their suppliers and customers

The stockists were asked to state the geographical distribution of their customers. They were also asked to estimate the quantities of forage seeds sold to customers. The distances and quantities of seeds are shown in Table 8. Most of seed customers were

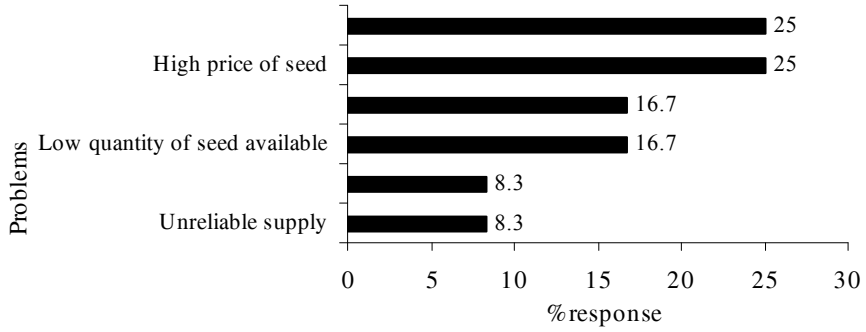

Figure 4. Problems in acquisition of forage/pasture seed

TABLE IV (a) - REASONS FOR NON-REPACKAGING OF FORAGE SEEDS

	Frequency	Percent
Not Recommended (Government Policy)	15	88.2
Farmers Wont Trust Repackaging	2	11.8
Total	17	100

within 34 km of the stockists. Some farmers ordered the seeds in cases where the seed type was not stocked by stockists. Majority of stockists (76%) were aware of suitable forage species to be grown in respective locations and zones they operated and majority (94%) of them shared this knowledge with customers (Table 4b).

TABLE IV (b) - DISTANCE TO CUSTOMERS AND SEED QUANTITIES SOLD

Variable	N	Minimum	Maximum	Mean	SE
Rains Distance to destination	4	15.0	50.0	33.8	9.4
Seed Quantities sold destination	5	10.0	25000.0	10050.0	6103.4
					Percent n=17
% Stockists with knowledge on suitable of forage/fodder species n=17					76.47
Pass information on suitable forage varieties n=17					94.12

Forage seed package analyses

The package sizes sold varied with type of forage species. The respondents were asked the packaging and re-packaging of pasture seeds. The seeds were packaged in 1kg, 0.5kg and 0.25kg packets. The size of packages ranged from 0.25kg (Desmodium), 0.5kg. (Rhodes grass) to 1kg (the rest of pasture/forage species (Table 4). This reveals that the target groups could be smallholder farms who are of low resource base.

demand were ley pasture seeds mainly boma Rhodes and those with lowest demand were elmba Rhodes, desmodium, lucerne and Nandi setaria, and oats. The increasing demand is attributed to the improving dairy industry. For example the price of milk has been increasing over years. Another aspect that may be contributing increasing demand for the pasture seed could be increasing scarcity of natural pastures attributed to declining farm size, climatic change as manifested in unreliable and unpredictable weather changes.

Constraints to seed marketing

Stockists gave constraints to selling of forage seeds as shown in Fig. 6. Marketing constraints such as the competition from others (23%), low seed sales (20%), seasonality in demand (17%), risk of seed loosing viability (14%), inappropriate packaging,

TABLE V - SEED PACKAGE IN ORDER OF PREFERENCE (N=42)

Pasture species	Package size	Minimum	Maximum	Mean
Boma rhodes	1kg	540.00	650.00	599.09
	O.5kg	300.00	300.00	300.00
Coloured guinea	1kg	600.00	600.00	600.00
Desmodium	0.25kg	350.00	350.00	350.00
Elmba rhodes	1kg	600.00	600.00	600.00
Kow kandy	1kg	210.00	650.00	335.00
Lucern	1kg	1300.00	1350.00	1316.67
Nasiwa seteria	1kg	600.00	600.00	600.00
Oats	1kg	100.00	120.00	110.00
Sudan grass	1kg	120.00	120.00	120.00

Price setting/formation

Price setting is an important element in the marketing mix strategies. Respondents were also asked to state how they compute their price. They indicated that they sell at recommended prices as per the seed companies price list (88%) and also made some adjustments depending on the marketing costs (12%) (Fig 5).

Demand of seeds

When asked whether the stockists met the customer seed demand, about 71% indicated that they did not meet the demand (Table 6). The seeds in highest and high price of seed charged by suppliers (Fig 6). In addition key informant discussions showed that policy constraints such as ineffective seed law, the slow certification process for new seed varieties and retrieval of this unsold seeds from sale points were other obstacles to the dissemination of forage species to areas of high potential production. Strategies aimed at developing the forage seed market and the promotion of good quality seeds will make dissemination of forage seeds possible in the face of declining farm size and also competition with other seed traders.

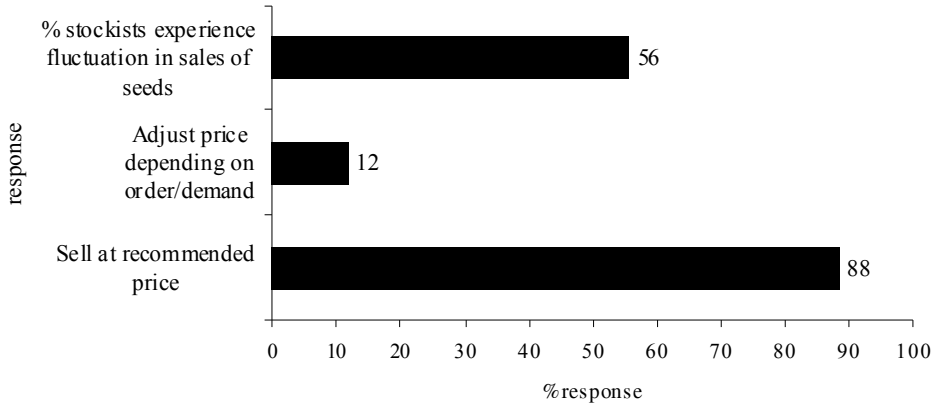

Figure 5. What price do you sell Percent

TABLE VI - SEED DEMAND TRENDS BY SPECIES

forage/fodder seed have the highest demand	
	%
Others forages	6.7
Boma rhodes	80.0
kow kandy	6.7
Pasture grasses	6.7
Total	100.0
forage/fodder seed have the lowest demand	
	%
Desmodium	40.0
Elmba rhodes	20.0
Nandi setaria	20.0
Oats	20.0
Total	100.0

On the other hand, creation of awareness with extension support would lead to increased demand and might reduce the severity of the problem of unsold seed stock. Adequate credit provision through various channels such as microfinance organizations would therefore help to promote seed selling and marketing to farmers.

Growth of seed industry and policy

Respondents were asked their opinion on trends in forage seed marketing in the previous 5 years. About 46% said that the marketing of the seeds had been on the increase, 23% said that it was fluctuating while 15% said that it was on the decrease. Options suggested for accelerating the growth of forage seed industry include**: a**ccess credit to acquire seeds (8%); supplier to reduce price of seed (46%), produce seeds of high quality (15%), give customers more information, and general trade information (6%) (Table 6).

TABLE VI - TRENDS AND STRATEGIES TO ACCELERATE FORAGE/PASTURE SEED SALES 2004-2009.

Variable	Percent n=13
Trends in forage/pasture seed sales 2004-2009	
Increasing	46
Decreasing	15
Fluctuating	23
No change	15
Total	100
Strategies to accelerate your sales	Percent
Access credit to acquire seeds	8
Supplier to reduce price of seed	46
Customer demand information	15
General trade information	8
Seed of high quality	23
Total	100

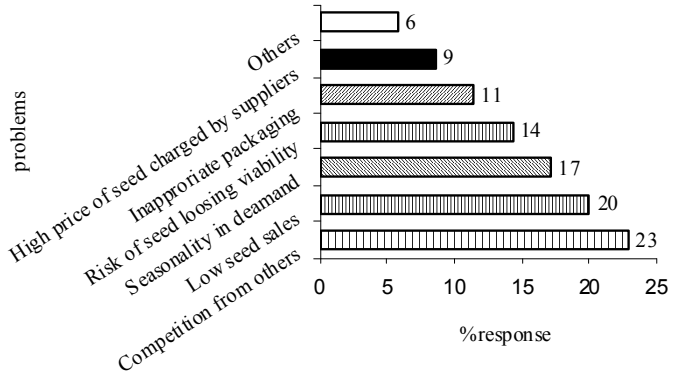

Figure 6: Constraints to seed sale by stockists

CONCLUSIONS AND RECOMMENDATIONS

The results revealed that quantities supplied and demanded of forage/pasture seeds is relatively low. This manifested in low acreage of improved pasture at farm level. In addition, very few traders stock pasture seeds because of the low demand. This is attributed to the fact that promotion of the seeds which is poor in comparison to maize seeds. Overall, this has contributed to poor performance of the forage seed industry. It is concluded that forage seed promotion and efficient packaging and stocking in accordance with farmers' package size preference would increases demand for the input. Frequent monitoring of forage seed markets to assess key economic indicators is necessary to improve the seed industry.

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