CONFERENCE PAPER

Disentangling farmers' preferences and cost allocation among inputs for food security in Vihiga District, Kenya

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ABSTRACT

Vihiga, one of the poorest and densely populated districts in Kenya, is perpetually in food deficit. Poor welfare and a low resource base continue to curtail efforts to circumvent food insecurity among households in the district. In their current financial status, what are their preferences when it comes to choosing inputs for food production? How do they allocate their scarce input expenditure among the various inputs required for food production? What are their major considerations when they are making such choices? Descriptive statistics were used to determine input preferences and cost distribution among the farm inputs. Cluster sampling was used with divisions forming the main clusters in the district. Using systematic random sampling, 50 households were selected from each cluster resulting in a sample of 300. Results show that labour cost pre-dominates farm input cost followed by fertilizers and seed maize. Out of the total labour cost, land preparation, weeding and shelling account for the largest part, the balance being accounted for by planting, harvesting, topdressing and transport activities. Similarly, inorganic fertilizer is the major contributor to soil amendment costs, and local seed is preferred due to its low acquisition costs, while hybrid H 614 is preferred to other hybrid seed due to its performance and other desirable properties like low postharvest losses during handling. Knowledge of farmers' input preferences and a deeper understanding of contributors to input cost are critical for proper planning of farmers production, especially when production is rain fed.

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KEYWORDS: Farmers' preferences; cost allocation; Food security; Vihiga; Kenya

1. Introduction

Despite having the potential to meet domestic food demand, Kenya continued to face persistent food deficits over the last two decades. Over the last decade annual demand for maize, the main staple food in the country rose from 29.5 million bags to 37.6 million bags (GOK, 2009). However, annual production ranged between 25 and 33 million bags in the same period thus necessitating importation of food to meet the deficit. To make matters worse, Kenya happens to fall in 'Sub-Saharan Africa which is off track on the hunger goal — and is the only region where child malnutrition is not declining' (World Bank, 2006).

Vihiga, one of the poorest and densely populated districts in Kenya is perpetually in food deficit (GOK, 2004). This has been attributed to limited land, high poverty levels, limited off-farm income, and non-adoption of recommended farm technologies. Over the last decade, the district maize demand outpaced local production worsening the already bad food deficit situation.

Food security describes a situation in which people do not live in hunger or fear of starvation. According to FAO (2005), food security exists when all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. Food security can therefore be assured by tackling both demand side and supply side constraints. Addressing demand side constraints encompasses measures that attempt to improve access to food by improving purchasing power of individuals through putting money in people's pockets. Addressing supply side constraints entails empowering individuals or households to access and utilize inputs optimally to maximize output while keeping the cost of production as low as possible.

As poverty levels rise, household food insecurity in the district worsens. Families with the financial resources to escape extreme poverty rarely suffer from chronic hunger; while poor families not only suffer the most from chronic hunger, but are also the segment of the population most at risk during food shortages and

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famine (FAO, 2005). Vihiga district has unfavorable poverty indicators as measured by food poverty, absolute poverty and hard-core poverty. About 57.6 percent of the population in Vihiga district lives below the absolute poverty line, which is set at US$ 34.39[2] and US$ 16.08 per month for urban and rural areas respectively (GOK, 2004). Similarly, more than half of the households in Vihiga, which is one of the worst hit districts in Kenya, fell below the absolute poverty line. Poverty has a twin impact on household food security. It not only reduces the capacity of households to access farm inputs due to capital limitations thus hindering expanded food production, but also prevents households from accessing food due to their low or non-existent purchasing power. Poor welfare indicators and resource base continue to curtail efforts to circumvent food insecurity among households in the district raising a number of questions. In their current financial status, what are their preferences when it comes to choosing inputs for food production? How do they allocate their scarce input expenditure among the various inputs required for food production? What are their major considerations when they are making such choices? The paper examines farmers' preferences and cost allocation among inputs for food production in Vihiga district, Kenya. The paper is subdivided into four sections. In section one, an introductory exposition of the problem is presented. In section two, materials and methods are presented with key considerations being the review of the theoretical framework and various methodologies used. In sections three and four, results and discussions followed by conclusions of the study are presented.

2. Materials and Methods

In Vihiga district, Kenya most farmers are entirely subsistence and therefore are not driven by the profit motive. This study, therefore, did not duel on the intricacies of stochastic modeling of farmers' cost behavior, but evaluated farmers' preferences for certain category of inputs and how their input cost was allocated among the various inputs.

Methodologies

The study targeted all farm households in Vihiga district. Cluster sampling was adopted on the basis of the six divisions. Using systematic random sampling procedure, 50 households were selected from each cluster generating a sample of 300 respondents. Both primary and secondary data was used. Types of data collected encompassed resource endowments at household levels, area allocated to maize in acres, farm input quantities and prices for fertilizer, seed, farm yard manure, labor, machinery and transportation. Primary data was collected through a survey while secondary data was acquired through perusal of annual agricultural reports, economic surveys, statistical abstracts and development plans. Both interviews and questionnaires were used as instruments for data collection. To validate survey instruments, 10 questionnaires were pre-tested in one of the divisions, revised and forwarded to enumerators. Trained enumerators were used to administer the questionnaires. Focused group discussion was used to elicit information from key informants who included the district agricultural officer, district development officer, heads of district non-governmental organizations, divisional agricultural extension officers, field extension workers and local administration. Observation was used to countercheck some of the findings. Descriptive statistics especially measures of central tendency and bar charts were used to isolate the unique characteristics of household in Vihiga district using SPSS.

[2] At mid-October 2011, $1 (US) was equivalent to about £0.63 and €0.7

Results and Discussion

Socio-economic Profile of respondents

Table 1 shows a summary of socio-economic characteristics of respondents surveyed.

While the total members of the households ranged between 1 and 26, household size averaged around 6 people (Table 1). A few households which were extremely large were reported to be polygamist. On the contrary, while the number of adults per household ranged between 1 and 16, the household adult number averaged around 4 people. The results also show that an average household in Vihiga district is likely to own 2 head of cattle and 6 poultry. However, while some households neither own cattle nor poultry, there were households reported to own as many as 19 cattle and 60 poultry animals respectively. Incidentally, about 79 percent (Figure 1) of the households own less than the average number of cattle estimated at 2, while 21 percent own more than the average figure.

Similarly, about 68 percent (Figure 1) of the households own less than the average number of poultry animals estimated at 6, while 32 percent own more than the average figure. Results on land area under food production (Figure 2) do not paint a different picture. Over 64 percent of respondents managed to put less than the average size of land estimated at 0.71 hectares under food production, while only 36 percent achieved more than average acreage. This explains how the majority of the poor residents of Vihiga district have a very poor asset base compounding their inability to utilize their limited resources.

Table 2 shows highest level of education attainment among households in Vihiga district. While 53 percent of the respondents did not go beyond primary school, 26 percent attained a maximum of secondary education and the remaining 21 percent underwent vocational, college or university training. The large percentage of primary level households could explain the difficulties faced by extension agents in trying to convince farmers to adopt new technologies.

The picture painted by employment among the surveyed respondents is glum. About 73 percent (Table 3) of respondents were not in formal employment, while only 27 percent were in formal employment. This indicates that livelihoods of the majority of the Vihiga residents were either dependent on their small pieces of land or on transfers from their working relatives in urban centers.

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Table 1: Indicators of Household Socio-economic Profile in Vihiga district

Indicator	N	Minimum	Maximum	Mean	Std. Dev.
Number of household members	300	1	26	6	2.9
Number of adults	300	1	16	4	2
No. of cattle	290	0	19	2	1.7
No. of poultry	288	0	60	6	6.6
Size of land under food production(Ha)	297	0	7	0.71	0.82

Source: Authors compilation, 2006.

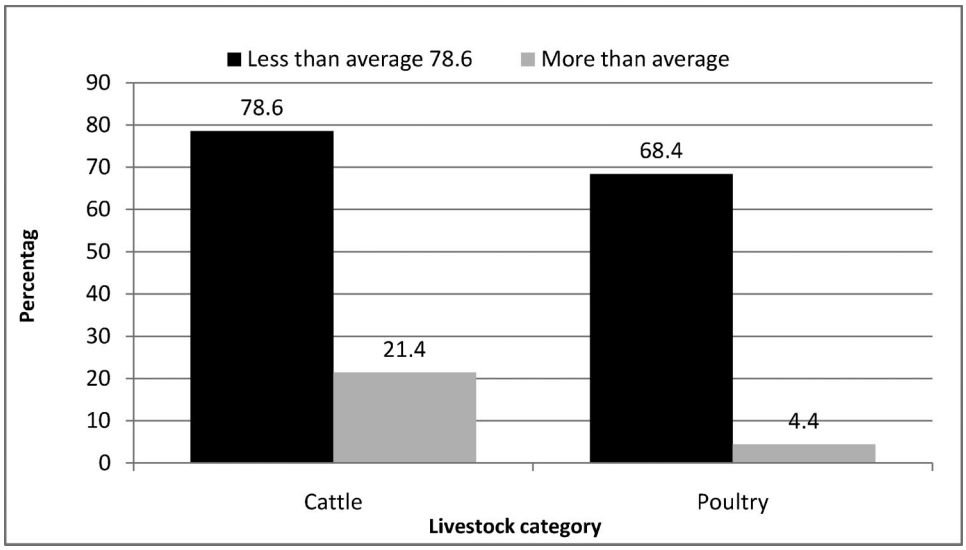

Figure 1: Livestock ownership across households by percentage
Source: Derived from authors' survey, 2006

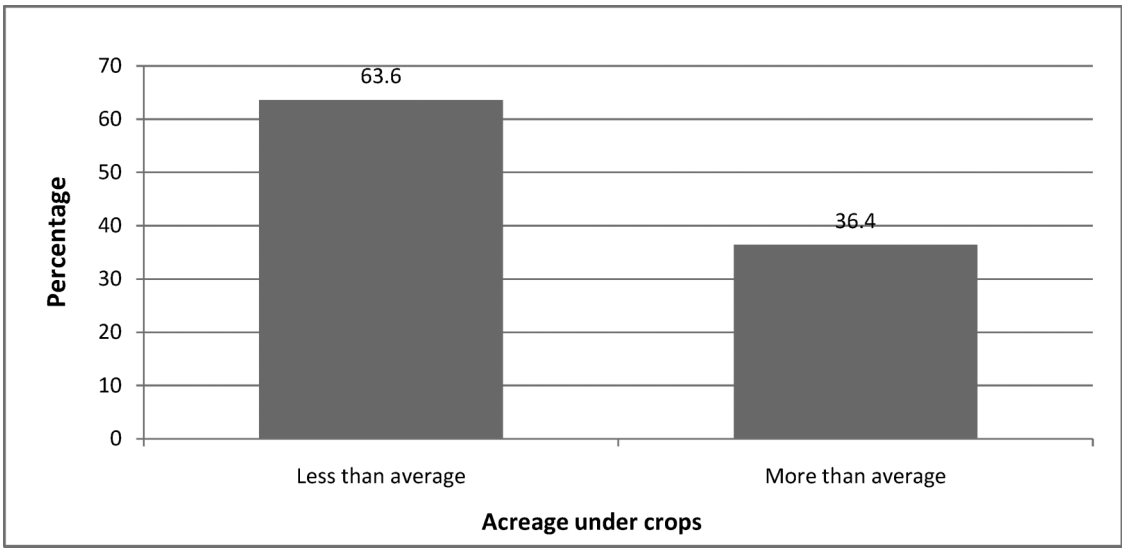

Figure 2: Acreage under food crops across households by percentage
Source: Derived from authors' survey, 2006

Cost allocation among farm inputs

Results show that labor is the single most predominant farm input followed by fertilizers and seed maize with cost shares of 64.2 percent, 20.5 percent and 8.7percent respectively (Figure 3).Out of the total labor cost, land preparation, weeding and shelling contribute 73 percent (Figure 4) with the balance being accounted for by planting, harvesting, topdressing and transport activities.

However, of the total soil amendments and pest control costs diamonium phosphate (DAP), calcium ammonium nitrate (CAN) and farm yard manure (FYM) account for 44.18, 30.5 and 24.8 percent respectively(Figure 5) indicating that chemical fertilizers

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Table 2: Highest education level

Education level	Frequency	Percent	Cumulative Percent
Pre-primary	27	9.4	9.4
Primary	125	43.6	53
Secondary	75	26.1	79.1
Vocational training	18	6.3	85.4
College/University	42	14.6	100
Total	**287**	**100**	

Source: Compiled from authors' survey, 2006

Table 3: Employment status across households in Vihiga district

Status	Frequency	Percent
Unemployed	220	73.3
Employed	80	26.7
Total	**300**	**100**

Source: Compiled from authors' survey, 2006

are the most predominant contributor to the soil amendment costs.

Results further show that hybrid (H614), local variety and hybrid (H512) account for 40.1, 42.3 and 12.8 percent respectively of the total seed cost (Figure 6).

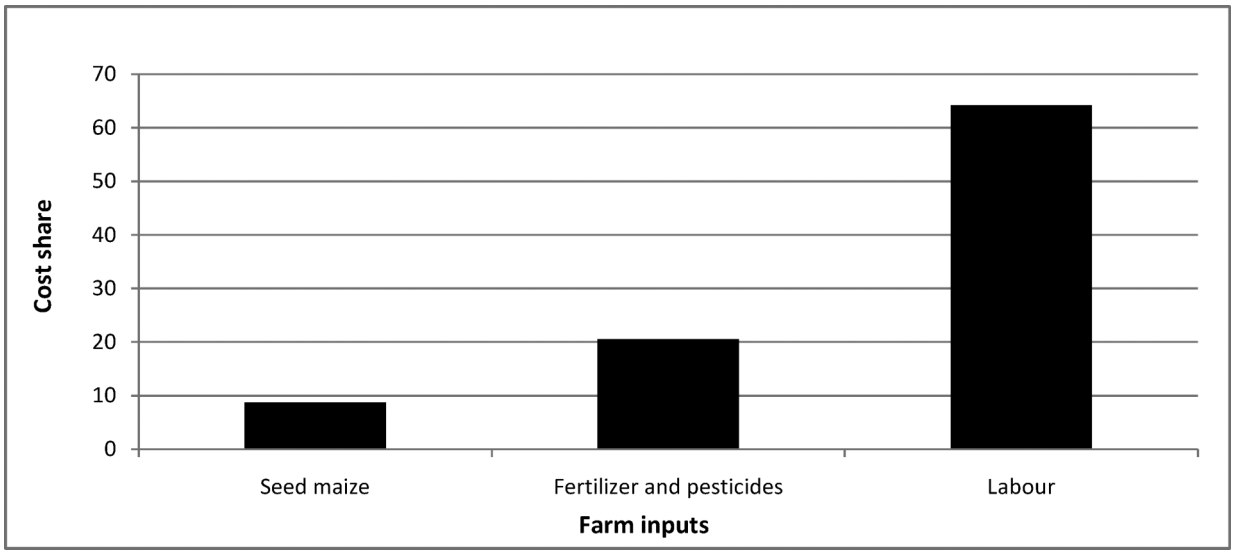

Figure 3: Average household cost share across farm inputs
Source: Derived from author's survey data, 2006

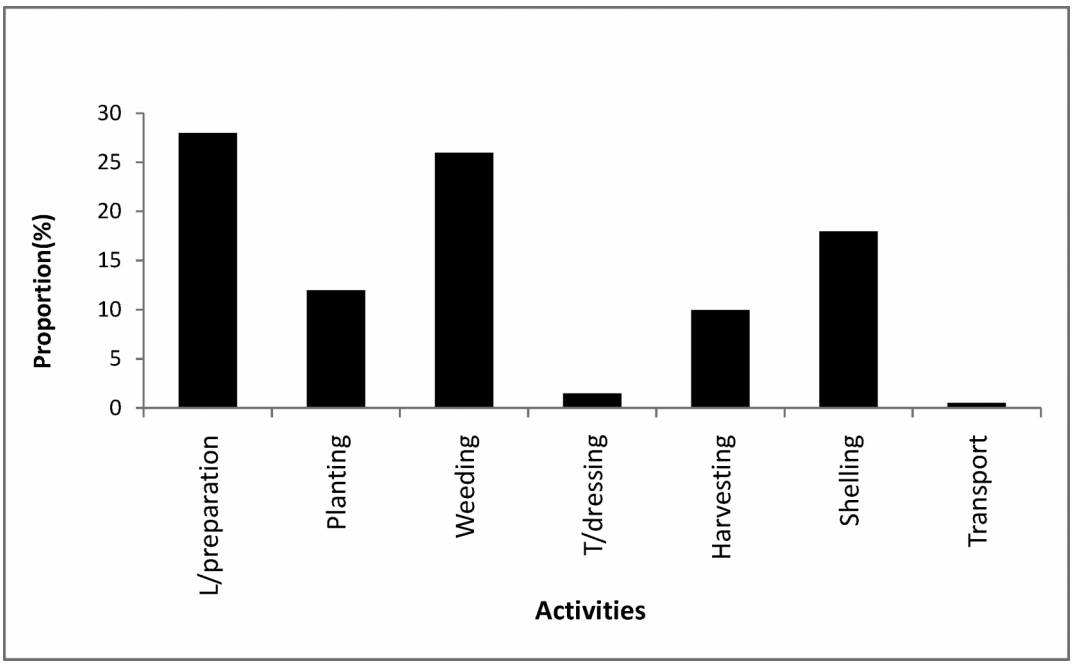

Figure 4: Contribution to labour cost of production
Source: Derived from author's survey data, 2006

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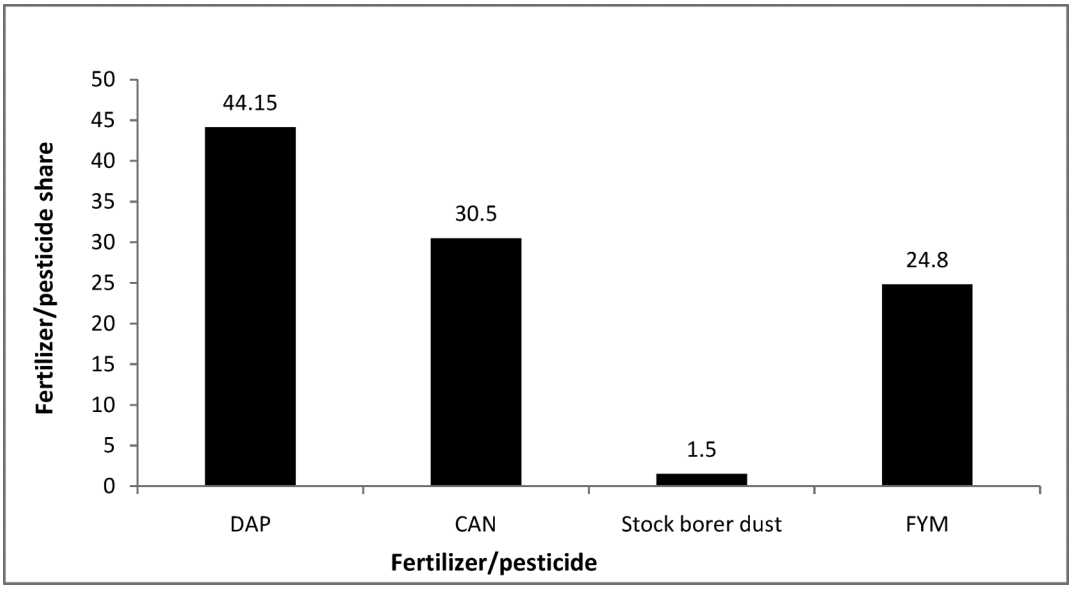

Figure 5: Contributor to fertilizer/pesticide cost
Source: Derived from author's survey data, 2006

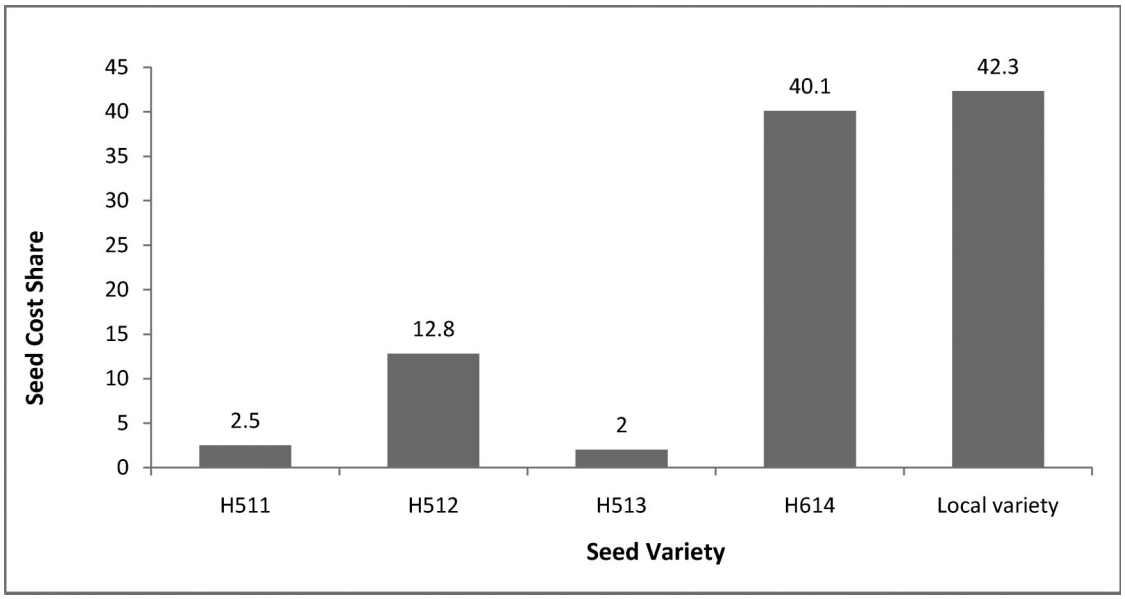

Figure 6: Predominant seed varieties
Source: Derived from author's survey data, 2006

Thus by implication Vihiga farmers who are not growing the local variety are likely to be growing H614. Incidentally H614 which is a high altitude variety seems to be more popular in Vihiga district than the low altitude maize varieties such as H511, H512, and H513. This shows that among the hybrid seed varieties many farmers prefer H614 to other seed varieties. However, when you consider all the seed varieties many farmers prefer local variety to hybrid.

3. Conclusions

Vihiga, one of the poorest and densely populated districts in Kenya is perpetually food deficit. Poor welfare and resource base curtail efforts to circumvent food insecurity among households in the district. In their current financial status, what are their preferences when it comes to choosing inputs for food production? How do they allocate their scarce input expenditure among the various inputs required for food production? What are their major considerations when they are making such choices? Descriptive statistics were used to determine input preferences and cost distribution among the farm inputs. Cluster sampling was used with divisions forming the main clusters in the district. Using systematic random sampling, 50 households were selected from each cluster resulting in a sample of 300.

Results show that labour cost pre-dominates farm input cost followed by fertilizers and seed maize. Out of the total labor cost, land preparation, weeding and shelling account for the largest chunk of labor cost the balance being accounted for by planting, harvesting,

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topdressing and transport activities. Similarly, inorganic fertilizers are the major contributor to soil amendment costs.

Results further show a higher preference by farmers for local seed variety when all seed are considered due to its low acquisition costs. However, when only hybrid seed varieties are considered farmers show preference of H 614 over the remaining hybrid seed varieties due to its performance and other desirable properties like low postharvest losses during handling.

It is concluded that preference of farmers and a deeper understanding of major contributors to input cost is critical for proper planning of farmers 'production. This will facilitate timely acquisition of production inputs which is a pre-requisite for successful agricultural production considering that a large chunk of the agricultural preproduction is rain fed.

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