INTRODUCTION

Common beans (Phaseolus vulgaris L.) are mainly consumed without much processing although value addition through precooking has many benefits. Challenges in common bean production include erratic and poorly distributed rainfall, use of poor genetic materials, field and storage pests, and degraded natural resources (especially declining soil fertility). Although small-scale farmers are prone to food insecurity, they feed more than 80% of the world’s population. Many of them are in the developing world (Herren et al., 2012). Moreover, many communities in sub-Saharan Africa depend largely on agriculture. In this region, relatively slow expansion in cultivated area is due to scarcity of arable land and is aggravated by rapid population growth (Sibiko, 2012). Thus, development of resilient and affordable agricultural systems is vital (Njor, 2013). Most smallholder farmers in Kenya own less than two hectares of land (Altieri et al., 2012). Such land sizes are likely to be further reduced due to land fragmentation and unregulated urban centres’ expansion leading to reduced available arable land. Agricultural extension is the main means of information delivery, alongside dissemination of new technologies to farmers for increased production in food and animal products (Kirim, 2013). However, declining government budgets combined with waning donor interest has led to cuts in public extension services (Yusuf et al., 2011). Limited farmer access to extension services further exacerbates farm productivity among smallholder farmers (Chemingina et al., 2014). Additionally, challenges facing smallholder farmers included access to improved inputs e.g. certified bean seed; low household income from crop sales and distorted bean production, aggregation and marketing systems. facing smallholder farmers in the selected bean production corridors in Kenya. To address these challenges, a study was carried out to establish, quantify and document the relative importance of factors to access to farm inputs; production and marketing; and identify potential opportunities that can be explored to enhance production and marketing in selected bean production corridors in Kenya. The objectives of the study were to:

- Characterise common bean producers in Bomet, Homa Bay, Machakos and Narok Counties
- Establish challenges in common bean production and marketing
- Establish opportunities for increased adoption and production of common bean and marketing in the bean production corridors

METHODS

The study adopted a cross-sectional survey design to collect data. A multi-stage random sampling technique was used to select study sites from County, sub-County, Division, Location, sub-Location and villages as recommended by Thompson et al. (2011). Two villages were selected in each sub-Location. With assistance of localbean extension officers and local administrators, names of households in the selected villages were listed. This formed the sampling frame from which the desired sample size of 440 respondents was randomly drawn proportionately (70 from Bomet, 238 from Homa Bay, 61 from Machakos and 71 from Narok). The study included more selected respondents than the other counties due to its volumes of beans previously produced. A semi-structured questionnaire was used to collect data. Data were analysed using Ordinary List Squares (OLS) regression model

\[ Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \epsilon \]

where \( Y \) = Ln cop household income; \( \alpha \) = constant; \( \beta \) = Predictor of average change in \( Y \) that is associated with a unit change in \( X_1, X_2, X_3 \);

- \( X_1 \) = Quantity of bean seed bought;
- \( X_2 \) = Price of bean seed per kg;
- \( X_3 \) = Area grown with beans relative to total land owned.

The study sought to relate variables contributing to household income from crop sales. Correlation analysis was carried out to establish any relationship between household income from crop sales and the factors contributing to it. Descriptive and inferential statistics were used to present the study findings.

RESULTS

Household income from crop production is a function of several independent variables including demographic characteristics of the respondents (education level, education and household member members) and cropped land, amount of seed bought and supplier of seed. Gender of the respondents was 29% men and 71% women. Most (64%) had either no education or at least primary education, while 27% had secondary education. Only 9% had tertiary education. Suggestions from discussions with respondents indicated that organised crop production and marketing enabled farmers to jointly produce and market their farm produce. Main challenges included the proportion of owned land grown with beans, which significantly influenced household income from crop sales (p=0.028). Similarly, respondents who planted improved (certified) seed gained more from sales relative to those who planted home or recycled seed (p=0.070) (Table 1). Other challenges were low prices, transport (walking for long distances to sell farm produce and procure farm inputs) and market intermediaries interfering with market price stability.

Table 1. Effects of selected production factors on household income from crop sales

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coef.</th>
<th>p-Value</th>
<th>t-Statistic</th>
<th>Std. Err.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>9.268532</td>
<td>0.000000</td>
<td>36.79</td>
<td>0.2519</td>
</tr>
<tr>
<td>Quantity of bean seed bought (kg)</td>
<td>0.005555</td>
<td>0.000094</td>
<td>5.86</td>
<td>0.0378</td>
</tr>
<tr>
<td>Bean price in KES/kg</td>
<td>0.001868</td>
<td>0.2184</td>
<td>1.24</td>
<td>0.1916</td>
</tr>
<tr>
<td>Proportion of owned land under bean</td>
<td>0.019405</td>
<td>0.0282</td>
<td>2.21</td>
<td>0.1389</td>
</tr>
<tr>
<td>Used improved bean seed (base is no)</td>
<td>0.236015</td>
<td>0.0700</td>
<td>1.82</td>
<td>0.1296</td>
</tr>
<tr>
<td>Household normally sells beans (base is no)</td>
<td>0.545204</td>
<td>0.0111</td>
<td>2.57</td>
<td>0.2122</td>
</tr>
<tr>
<td>Household head attained secondary level of education (base is primary and below)</td>
<td>0.252524</td>
<td>0.0404</td>
<td>2.07</td>
<td>0.1222</td>
</tr>
</tbody>
</table>

**X, Y, Z Significant at 10%, 5% and 1% level**

CONCLUSION

Quantity of bean seed bought is positively highly correlated to household income. The more the amount of bean seed bought the higher the household income. Study advocates for increased bean seed purchases to increase crop sales. Education plays an important role in timely and accurate decision-making on procurement of farm inputs and apportioning household owned land under crops. Promotion and commercialisation of improved bean varieties through well-established public-private-partnership platform such as community production and marketing system (COPMAS) has great potential to improve household income, food security and nutrition from crop sales.

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REFERENCES


