Factors Affecting Bean Production and Marketing in Nyakitunda Sub-county, Isingiro District

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Abstract

Bean production plays a critical role in enhancing household food security and income. Despite the role of the crop, farmers of Nyakitunda Sub-county still encounter different constraints during production and marketing of the crop. The study was to investigate the factors affecting bean production and marketing in Nyakitunda Sub-county, Isingiro district. It was specifically conducted to; (i) to identify the production constraints of beans, (ii) identify the marketing constraints of beans, and (iii) identify the challenges faced by specific gender categories in accessing and utilization of resources in bean production. A cross sectional research design applying both qualitative and quantitative techniques was used to collect data from 190 farmers using questionnaires, interview guide and focus group discussions. Data was analyzed using SPSS software to generate both descriptive and inferential statistics. The study found out significant bean production constrains in Nyakitunda Sub-county as; poor quality seeds ($p = .000$), lack of access to production assets ($p = .001$), pests and diseases ($p = .004$), access to extension ($p = .004$), shortage of production land ($p = .003$) and having access to other off-farm income generating activities ($p = .000$). The study also found out the significant bean marketing constraints in Nyakitunda Sub-county as: poor roads ($p = .001$), high transport costs ($p = .004$), low bean prices ($p = .000$), lack of market information ($p = .014$), poor storage facilities ($p = .002$) and long distance to the market ($p = .003$). The study further established that there are gender specific challenges experienced in access and utilization of bean production resources including: labour shortage, inadequate access to credit services, limited land for production, limited access to information, lack of technical production knowledge, lack of capital discrimination, sexual harassment, strict cultural values and beliefs. The study concluded that there are factors affecting bean production and marketing in Nyakitunda Sub-county and recommended the need for sensitizing farmers on the benefits of adopting soil enhancing technologies to restore soil fertility since poor soils were cited among the challenging factors of production in the area. The study further recommended MAAIF and NARO interventions in providing more extension services and training about correct input application as well as supply farmers with improved pests and disease bean seed varieties and high yielding traits.

Key words: Factors affecting, bean production, bean marketing, Nyakitunda Sub-county, Isingiro, and Uganda.

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Introduction

Common bean (*Phaseolus vulgaris* L.) is an important food crop providing essential amino acids and proteins. Common beans (*Phaseolus vulgaris* L.) are mainly consumed without much processing although value addition through precooking has many benefits. There are one of the oldest crops known to man (Auma, 2010; Beebe *et al.,* 2011). As food they are a cheap but important source of high-quality proteins, and are consumed all year round because of their good storage properties.

Global beans Production has expanded slowly, based on population growth, with highest usage in poor (developing) countries, where beans provide an alternative to meat as a source of low-cost protein (Bokanga, 2013). In eastern and southern Africa, beans is recognized as the second most important source of human dietary protein and third most important source of calories. While in Kenya Tanzania, Malawi, and Zambia particularly among other counties, it is a major source of dietary protein (Bokanga, 2013). Despite the benefits derived from beans, the production and marketing of this crop, is constrained by several socio-economic, institutional and environmental factors, notably biotic (field and post-harvest pests and diseases) and abiotic (drought, excessive rain/flooding, poor soil fertility, heat and cold stress), each of which causes significant reductions in yield (Wojciech, 2013).

In Sub-Saharan Africa, Abdulai & Birachi, (2009) reports that demand for beans is at 20,000 metric tons per year and is projected to grow in excess of 40,000 metric tons over the next 10 years. Sub-Saharan Africa has a growing population faster than agricultural production does. Thus, to feed this population, agricultural production should grow at the same pace or even more (Ebert, 2014). Though the demand for beans is growing in both domestic and export markets, production and marketing constraints have inhibited very many farmers from benefiting from the bean sector (Kaganzi, 2010; Chirwa et al., 2007). Consequently, the potential of beans is not exploited in most growing areas due to un-access to improved varieties, poor management practices as well as biotic and abiotic factors (Ogbomo, 2005).

In Uganda, beans are the most widely grown pulse, second to maize as a food crop and a major source of food security in the country. According to Mbwaga *et al.,* (2010) beans are consumed by people from all income levels and serve as a primary source of dietary protein for. Bean is a crop whose production and marketing has a potential pathway for improving rural livelihoods (David, 2015). It is also recognized as an important source of human dietary protein and calories. However, smallholder producers in Uganda still encounter multiple production and marketing constraints including inadequate capital, pests and diseases, poor marketing infrastructure, labour unavailability and unreliable climatic conditions.

Efforts to improve bean sector have seen government collaborate with Agricultural Research Centers develop improved bean varieties that are not only resistant to pest and diseases but are tolerant to low soil fertility as well (Mbwaga *et al.,* 2010). Commercialization and improved market access has been critical for improving smallholder incomes (Godfrey, 2011). However smallholder production and market participation is still influenced by differing factors. Mauyo *et al.,* (2007) alluded that poor soils, lack of information, pests and diseases, weather, land fragmentation, geographical location of the household have direct effects on the level of bean production. Bashaasha, (2010) cited that high transaction costs, distance to market place, means of transport, are some of the reasons for smallholder farmers' failure to participate in markets and supply the right quantity of produce.

Statement of the Problem

Despite the great potential of beans in mitigating food and nutritional problems as well as generating income for the farmers, the crop has received little attention in terms of addressing factors limiting production and marketability compared to crops like maize, cassava and banana which are believed to be important in both small and medium scale sectors, (NARO, 2016). The little hope given to the bean sector has mainly focused on yield improvement through diverse improved varieties leaving out production and marketing aspects yet they have a huge impact on the benefits derive from bean production (Mauyo *et al.,* 2007). In Nyakitunda Sub-county, the importance of beans cannot be overemphasized. The crop is known for fixing nitrogen in the soil, providing inexpensive protein to humans as well as quick cash (Godfrey, 2011; Abbott, 2013). Despite the crops benefits, production and marketing of beans has remained low (FAO. 2016). Farmers still encounter unknown production and marketing challenges. Studies conducted in other parts of Uganda have shown quite a number of factors affecting the bean production and marketing including declined soil fertility, pests and diseases, high input costs, land fragmentation and shortage, lack of credit services, high post-harvest losses and poor marketing systems (Bashaasha, 2010). No study had been conducted in Nyakitunda Sub-county to assess the factors for production and marketing.

Study Objectives

The main objective of the study was to identify the factors affecting bean production and marketing in Nyakitunda Sub-county in Isingiro district. The specific objectives were to; analyze the production constraints of beans; identify the marketing constraints of beans, and identify the gender specific challenges faced in access and utilization of bean production resources.

Study Hypothesis

H_O: There are no significant bean production constraints in Nyakitunda Sub-county

H_A: There are significant bean production constraints in Nyakitunda Sub-county

H_O: There are no significant bean marketing constraints in Nyakitunda Sub-county

H_A: There are significant bean marketing constraints in Nyakitunda Sub-county

H_O: There are no significant differences in gender specific challenges faced during access and utilization of production resources.

H_A: There are significant differences in gender specific challenges faced during access and utilization of production resources.
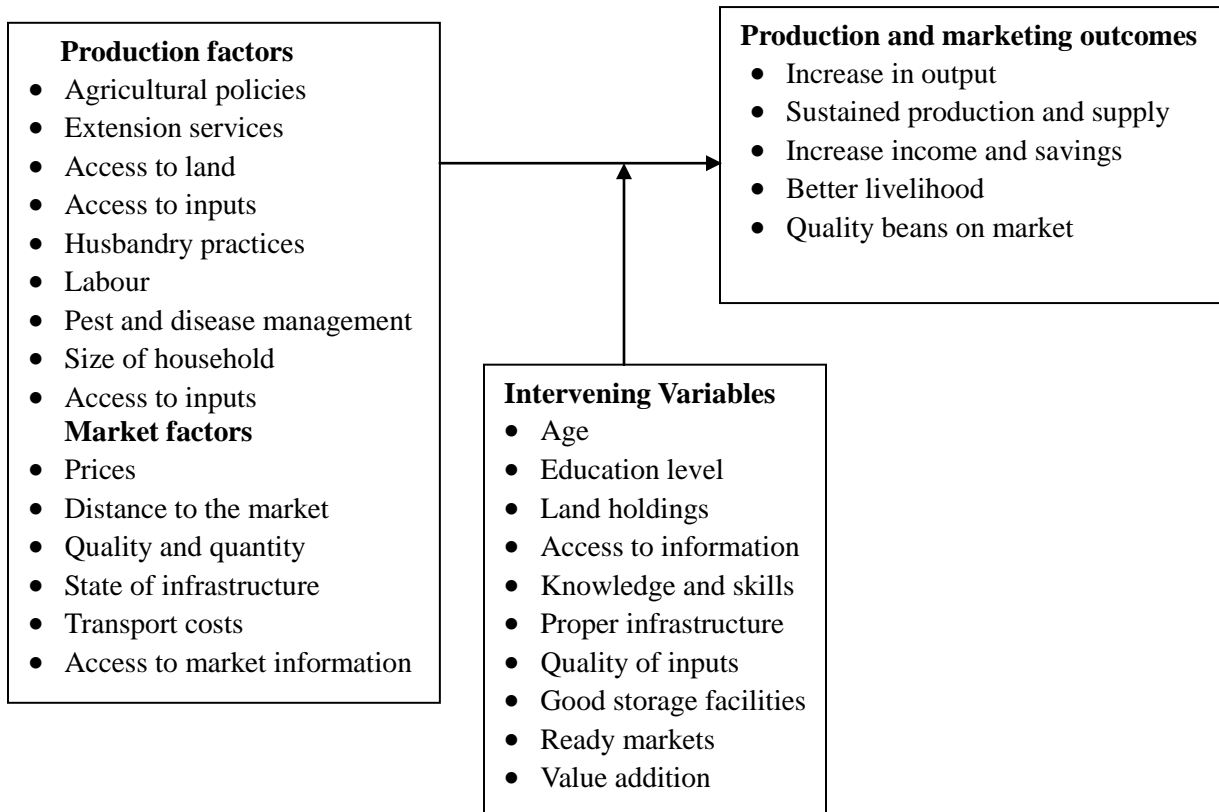
Conceptual Framework

As in indicated in the figure below, the study looked at production and marketing constraints as the independent variables while production and marketing outcomes were the dependent variables. The two sets of variables were interlinked by intervening variables. From the figure, bean production is influenced by agricultural policies, extension services, access to land, access to inputs, husbandry practices, labour, pest and disease management, size of household and access to inputs. On the other hand, marketing of beans is influenced by prices, distance to the market, quality and quantity, state of market infrastructure, transport costs and access to information. Achieving high bean output and market supply requires addressing production and marketing constraints which results in increase in output, sustained production and supply, increase income and savings, better livelihood, quality beans on market. The influence of the

independent variables on the dependent works through intervening variables like age of the household head, education level, land holdings, access to extension information, knowledge and skills, proper infrastructure, value added products and ready markets.

Figure 1: Conceptual Framework

Independent Variables   **Dependent Variables**

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┌─────────────────────────────────┐        ┌──────────────────────────────────────┐
│  Production factors             │        │  Production and marketing outcomes   │
│  • Agricultural policies        │        │  • Increase in output                │
│  • Extension services           │        │  • Sustained production and supply   │
│  • Access to land               │───────▶│  • Increase income and savings       │
│  • Access to inputs             │        │  • Better livelihood                 │
│  • Husbandry practices          │        │  • Quality beans on market           │
│  • Labour                       │        └──────────────────────────────────────┘
│  • Pest and disease management  │                         ▲
│  • Size of household            │                         │
│  • Access to inputs             │        ┌──────────────────────────────┐
│    Market factors               │        │  Intervening Variables       │
│  • Prices                       │        │  • Age                       │
│  • Distance to the market       │        │  • Education level           │
│  • Quality and quantity         │        │  • Land holdings             │
│  • State of infrastructure      │        │  • Access to information     │
│  • Transport costs              │        │  • Knowledge and skills      │
│  • Access to market information │        │  • Proper infrastructure     │
└─────────────────────────────────┘        │  • Quality of inputs         │
                                           │  • Good storage facilities   │
                                           │  • Ready markets             │
                                           │  • Value addition            │
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Methodology

This study was conducted in Nyakitunda Sub-county in Isingiro district. Agriculture is the mainstay of the economy. This agro-ecological zone was chosen because of the importance of beans in the area. In addition, most of the dissemination efforts on improved beans varieties had been concentrated in the highlands agro-ecological zone, further justifying the focus on this zone. The identification of this agro-ecological area was made through reviewing secondary data on the production of Common beans varieties.

A cross-sectional study design employed both qualitative and quantitative methods of data collection was used to collect primary data from farmers, traders and local leaders across the Sub-county. This approach enabled the researcher to study a single discrete social unit in depth Non-bean farmers were excluded from the study.

A sample of 190 households were selected randomly using single population proportion formula with 95% level of confidence and 5% margin of error. The respondent unit was the household head. Extension officers and local leaders were selected on purpose. The sample size for the study was determined by using a formula by Kish and Leslie (1965).

The study adopted two sampling procedures that is; simple random sampling and purposive sampling to arrive at respondents. Simple random sampling was applied to select farmers and traders. This was achieved by obtaining the registers containing the names of farmers from the Agricultural Officer and confirmed by the Political Leaders of the area with the aim of selecting the names of bean producers. Purposive sampling technique was used to choose Agricultural Extension Workers and Leaders.

Structured questionnaires were used to collect data from farmers. The questionnaires were checked for completeness, coded and entered into SPSS version 16 software package for cleaning and analysis.

Focus group discussions were held to get collective responses by stimulating discussion and enabling in free discussion of divergent views. Two FGDs were held with two different groups each made up of 15 members. The first group comprised of only women and the second was comprised of both men and women.

Key informant interview guide was chosen as the tool for qualitative data collection. Oral personal interviews that involved a face to face contact and conversation using an interview guide were used to capture opinions and views form Agricultural Officers and Leaders. The researcher also caught non-verbal communication of these key informants like tune of voice. This helped in capturing supplementary information on the subject under investigation. The data collection through questionnaire was analyzed using Excel and SPSS computer program. Both descriptive and inferential statistics were generated and used to interpret the study findings. All the results were presented in tables

Results

Demographic characteristics

Table 1: Gender of the respondent

Gender	Frequency	Percent
Male	77	40.5
Female	113	59.5
Total	190	100.0

As shown in table 1 above, 59.5% of the respondents were male and 40.5% were female

Table 2: Marital status of the respondent

Marital status	Frequency	Percent
Single	62	32.6
Married	122	64.2
Separated	6	3.2
Total	190	100.0

The result in Table 2 above shows that 64.2% the respondents were married, 32.6% were and 3.2% had divorced respectively.

Table 3: Occupation of the respondents

Occupation	Frequency	Percent
Peasant	120	63.2
Employed	40	21.1
Business	30	15.8
Total	190	100.0

As indicated in table 3 above 63.2% of the respondents were peasants, 21.1% were formally employed and 15.8% had small scale petty businesses.

Table 4: Household source of income

Source of income	Frequency	Percent
Farming	125	65.8
Salary	58	30.5
Business	7	3.7
Total	190	100.0

65.8% of the respondents surveyed earned income from agricultural production, 30.5% from salaries and 3.7% from small scale petty businesses.

Table 5: Descriptive statistics of age, education in years and household size

	N	Minimum	Maximum	Mean	Std. Deviation
Age in years	190	19	75	32.79	9.779
Educational level in years	190	0	18	8.81	4.764
Household size	190	2	12	5.43	2.328

Average age of the respondents was 32 with the youngest respondent aged 19 and the oldest 75 years. Average years in school were 8 years (senior one) with a minimum of those that never attended school and a maximum of 18 years (master degree). And average household had 5 members with the smallest household made of 2 members and the largest 12 members.

Bean production constraints

Table 6: Parameter estimates for bean production constraints in the area

Variables	B	S.E.	AOR	95.0% C.I. for AOR Lower	Upper	Sig.
Poor quality seeds	1.200	.373	1.221	.588	2.535	.000*
Access to production assets	-.275	.373	.760	.366	1.578	.001**
Shortage of labour	-.347	.416	.707	.313	1.596	.461
Pests and diseases	.130	.381	1.139	.540	2.403	.004**
Lack of credit access	1.064	.403	1.938	.426	2.067	.732
Access to extension	-.042	.383	.959	.452	2.032	.004***
Limited land	.480	.409	1.617	.726	3.602	.003*
Lack of access to fertilizers	1.140	.373	1.150	.553	2.390	.240
Weather changes	-.459	.416	.632	.280	1.428	.912
Off-farm income activities	1.268	.461	1.307	.530	3.224	.000*
Constant	-1.135	.507	.321			.561

*, **, *** Statistically significant at 10%, 5% and 1% significance level

As indicated in the table 6 above, the study identified significant bean production constraints in Nyakitunda Sub-county as; poor quality seeds (AOR = 1.221, 95% CI: .588-2.535; p = .000), accessibility to production assets (AOR = .760, 95% CI: .366 - 1.578; p = .001), pests and diseases (AOR = 1.139, 95% CI: .540 - 2.403; p = .004), lack of access to extension (AOR = .959, 95% CI: .452 - 2.032; p = .004), land shortage (AOR = 1.617, 95% CI: .726 - 3.602; p = .003) and having other off-farm income generating activities (AOR = 1.307, 95% CI: .530 - 3.224; p = .000). for this case the earlier stated null hypothesis (**Ho**) that there was no significant relationship between bean constraints like (poor quality seeds, inaccessibility to production assets, pests and diseases, lack of access to extension, land shortage and off-farm income generating activities) and bean production was rejected.

Bean marketing constraints

Table 7: Parameter estimates for bean marketing constraints in the area

	B	S.E.	AOR	95.0% C.I. for AOR Lower	Upper	Sig.
Poor roads	1.012	.466	1.012	.406	2.521	.001*
High transport costs	.668	.480	1.950	.761	4.996	.004*
Bean prices	1.025	.557	2.786	.934	8.306	.000**
High competition	.255	.637	1.290	.370	4.499	.690
Lack of market information	-1.138	.465	1.321	.129	2.797	.014*
High taxes	.396	.486	1.486	.573	3.851	.415
Exploitation from middle men	-.504	.454	.604	.248	1.472	.267
Poor storage facilities	-1.361	.449	.256	.106	.618	.002***

Distance to the market	1.290	.533	1.749	.263	2.129	.003**
Constant	-1.119	.719	.327			.120

*, **, *** Statistically significant at 10%, 5% and 1% significance level

As indicated in table 7 above, study found that poor state of roads in the area (AOR = 1.012, 95% CI: .406 - 2.521; p = .001), high transport costs (AOR = 1.950, 95% CI: .761 - 4.996; p = .004), low bean prices (AOR = 2.786, 95% CI: .934 - 8.306; p = .000), lack of market information (AOR = 1.321, 95% CI: .129 - 2.797; p = .014), poor storage facilities (AOR = .256, 95% CI: .106 - .618; p = .002) and long distances to the market places (AOR = 1.749, 95% CI: .263 - 2.129; p = .003) were significant bean marketing constraints in in Nyakitunda Sub-county. In this case the earlier stated null hypothesis (**Ho**) that there was no relationship between marketing constraints (such as; poor roads, high transport costs, low bean prices, lack of market information, poor storage facilities and long distances to the market places) and bean marketing was rejected.

Table 8: Challenges faced by specific gender categories in accessing and utilization of resources for beans.

Men		Women	
Challenges	**Freq. (%)**	**Challenges**	**Freq. (%)**
Limited access to information	17 (8.9%)	Discrimination	15 (7.8%)
Shortage of labour	59 (31%)	Limited access to information	13 (6.8%)
Inaccessibility to credit services	40 (21%)	Low levels of knowledge and skills	26 (13.6%)
Lack of technical knowledge	16 (8.4%)	Lack of labour	40 (21%)
Limited land resources	34 (17.8%)	Sexual harassment	10 (5.2%)
Limited access to inputs	10 (5.2%)	Lack of credit access	27 (14.2%)
Shortage of capital	14 (7.3%)	Cultural values and beliefs	16 (8.4%)
		Limited access to land	35 (18.4%)
		Shortage of inputs	08 (4.2%)
Total	190 (100%)	Total	190 (100%)

As shown in table 8 above, the major challenges of men in accessing and utilization of resources for bean production included shortage of labour reported by 31% of the respondents, 21% mentioned inadequate access to credit services, 17.8% reported limited bean production land, 8.9% reported limited access to information, 8.4% mentioned lack of technical production knowledge, 7.3% stated shortage of capital for investment and 5.2% talked of limited access to inputs.

Similarly women challenges in access and utilization of resources for bean production included; labour shortage reported by 21% of the respondents, limited access to land 18.4%, lack of credit access 14.2%, low levels of knowledge and skills 13.6% and the last being shortage of inputs 4.2%..

Discussion

Bean production constraints

Poor quality bean seed was a significant constraint to bean production at 10% level of significance. This implied that households with poor quality bean seed stocks were 1.2 times less likely to participate in production compared to farmers with good quality seeds (AOR = 1.221, 95% CI: .588 - 2.535; p = .000*). Improved or good quality bean seed influences a farmer's ability to participate in production because of its good attributes. In an interview held with one of the farmers in the sub-county, he had this to say;

> *"…………….it not once or twice that I have bought poor quality bean seed from local seed dealers in this sub-county. It was like a nightmare in my life, the seeds were not only non-resistant but equally performed badly leading me into huge losses. Poor quality seed is a problem to bean sector in this area".*

Access to production assets was a significant predictor for bean production at 5% level of significance. Productive assets are important in the production of various crops. The assets included hoes, wheelbarrows, machetes, ploughs and tractors. Hence, the odds reported for access to assets implied that farmers with relatively more assets realized higher bean outputs compared to those with fewer assets. Most bean farmers in the study area rely mostly on human labour to produce beans. Thus an increase in the usage of farm assets increases the efficiency of farming operations hence increasing outputs.

Pest and diseases were a significant constraint (p =.004) to bean production at 5% level of significance. Farmers who had past experience with pest and disease infestations were 1.14 times likely to harvest less compared to farmers with pest and disease free bean yields. It was reported that a number of smallholder farmers had even stopped growing beans because of a disease called Early Blight. In an interview with one of the extension agents, he revealed;

> *"……………..as a service provider in this area am informed about bean pests and diseases. Though our mandate is training farmers in pest and disease management, farmers especially those who do not bother to apply the knowledge passed onto them have continued to suffer losses due to pests and diseases".*

Farmer's limited access to extension services was another significant constraint (p =.004) to bean production at 1% level of significance. Extension visits have positive influence on farmer's adoption of recommended soil management practices, improved bean varieties and technologies. Hence, when there was no contact with extension agents, farmers were .959 times less likely to adopt agricultural innovations. In a focus group session with both men and women, it was revealed;

> *"…………access to extension services plays a critical role on agricultural production because it is the only channel through which farmers acquire knowledge and practical skills. In this area there are farmers who are frequently visited by extension service providers and this category of farmers have showed more bean output potential than farmers who rarely interact with service providers".*

Total land size had a statistically significant (at 10% level) and positive influence on bean production among the households. This could be due to the role of land size in boosting total production level. The odds (AOR = 1.617, 95% CI: .726 - 3.602; p = .003) for limited land implied that households with limited land were 1.6 times less likely to produce beans compared

to households with large pieces of land. This is because households with large land size could allocate their land partly for food crop production and partly for cash crop production giving them better position to participate in production.

Having off-farm income generating activities was a positive and significant constraint (p =.000) to bean production at 10% level of significance. A unit increase in off-farm activities leads to a decrease in bean production. This implied that, when a smallholder farmer owns a more rewarding off-farm income generating activity, the more she/he concentrates to that business and light-touches bean production which reduces bean output. In an interview with one of the farmers, she had this to say;

> *"………………having off-farm income generating activities is one the factors that can affect the decision to participate in bean production. If I get an opportunity now to start my own business, I can leave production because it is tiresome and stressing, I have my neighbor friend who left bean farmer immediately he had started a motorcycle garage on claims that his current business was making more*

Marketing constraints of beans

Poor road condition was a positive and significant constraint to the supply of beans to the market at 10% level of significance. The reported odds (AOR = 1.012, 95% CI: .406 - 2.521; p = .001) implied that farmers who resided in areas with impassable roads had 1.012 chances of not bring their produce to the market In an interview with one of the farmers, he revealed;

> *"…………….most of farmers in this area have tried their best to produce beans through capital investment and integrated pest management however the biggest challenge remains marketing their produce given the condition of roads in this area. During the rainy season, roads become impassible making it impossible for farmers to bring their produce to the market".*

High transport costs was a significant constraint (p =.004) towards bean marketing at 10% level of significance. This implied that a unit increase in the cost of transportation reduced a farmers' chances of participating in the market by 1.9 times. This is because high transport costs reduce the profit margins causing more losses to the farmer. In an interview with one of the key informants, he stated;

> *"…………...on top of the production challenges, farmers of this area are challenged with high costs of transporting their produce to the main market. The poor state of roads makes truck owners to charge farmers highly for any item transported. This alone demoralizes incapable farmers from market their produce".*

Bean prices were a significant market constraint (p =.000) at 10% level of significance. The market price for a kilogram of beans had a positive effect on the supply of bean to the market. This implies that, a unit increase in price of bean by Ugx 100 would increase the probability of farmer's supply of beans to the market and vice vasa. Ideally, the increase in the price of bean would lead to an increase in the amount of common bean produced and marketed since most bean producers would prefer supplying large quantities of produce at higher prevailing market price than to any other prices lower than the one prevailing in the market.. In a focus group discussion with a men's group, they disclosed;

> *"…………….beans prices in this area have gone done over the past four years and this is attributed to over production which gives traders and opportunity to*

exploit farmers with a price of their choice. Its imaginable a kilo of dry beans costing 700 shillings compared to other areas where a kilo costs 1200 shillings".

Lack of market information emerged a significant constraint (p =.014) to bean marketing at 10% level of significance. The odds (AOR = 1.321, 95% CI: .129 - 2.797; p = .004) implied that farmers who do not have access to market information are 1.3 times less likely to participate in bean marketing compared to those who access information. Access to market is paramount in that it enables farmers to get informed on the markets prices and bean varieties required.

Poor storage was another significant (p =.002) challenge to bean marketing in the area and it was statistically significant at 1%. Storage facilitates are prerequisite for proper bean drying and quality. Freshly harvested beans require proper storage facilities if issues of perishability must be addressed hence the reported odds indicate farmers without storage facilities were 0.25 times less likely to market their beans compared to those with access to storage facilities. In an interview with one of the farmers, he revealed;

> *"…………it would be my wish to sell my bean produce to the market and get a batter price but the problem I have is that I do not have a temporary store to put my produce before taking it to the market, as a result am forced to sell off the beans immediately after harvest".*

Distance to the market or nearby trading centre was positively correlated with marketability of beans and was statistically significant (p=0.003) at 5% level of significance. This implied that, an increase in distance to the market or trading centre by one kilometre reduced farmer's chances of marketing their beans or decrease the farmer's quantity of bean supplied to that market. The implication of close proximity to the market or trading centre to smallholder farmers enables them to incur less transport cost. Ideally, the longer distance to the market does not favor smallholder farmers in the marketing process, and to a great extent leads to a very big difference in profit margin between farmers and buyers in the value chain. In an interview with one of the farmers, she revealed;

> *"……………my home is a bit far from the nearby market and my produce per season relatively small (a few kilograms). I would wish to sell the produce and generate income but on several occasions I have failed to market my produce because of the distance I have to move from home to the market place".*

Challenges faced by specific gender categories

The study found different challenges faced by specific gender categories in accessing and utilization of resources in bean production. The key male challenges identified include shortage of labour, inadequate access to credit services, limited bean production land, limited access to information, lack of technical production knowledge, shortage of capital for investment and limited access to inputs. Similarly the key common women challenges identified include shortage in labour, limited access to land, lack of credit access, low levels of knowledge and skills, discrimination, sexual harassment, cultural values and beliefs and shortage of inputs. Gender gaps exist for a wide range of agricultural technologies, including access to land, machines and tools, improved plant varieties, fertilizers, pest control measures and management techniques. A number of constraints, including the gender gaps described above which lead to gender inequalities in access to and adoption of new technologies. The evidence points to significant gender differences in the adoption of improved technologies and the use of purchased inputs in the area. For example women's access to technological inputs such as improved seeds, fertilizers and pesticides is limited. They are frequently not even reached by extension services and are rarely members of co-operatives, which often distribute government

subsidized inputs to small farmers. In addition, they lack the cash income needed to purchase inputs even when they are subsidized.

In a focus group session with a group of women, they stated;

> *"…………women challenges in access and utilisation of agricultural production resources are quite different from men. In most cases women who are actively involved in bean production often come across challenges like limited access to land, sexual harassment, inadequate knowledge and skills, labour shortages, credit access and input shortages. This challenges limit their capacities to produce like their male counterparts".*

Conclusion

The study concludes that bean production in Nyakitunda Sub-county is constrained by factors such as; poor quality seeds, inaccessibility to production assets, pests and diseases, lack of access to extension services, shortage of production land and access to off-farm income generating activities. Marketing of beans in Nyakitunda Sub-county is still constrained by; poor state of roads, high transport costs, low bean prices, lack of market information, poor storage facilities and long distance movements to the market places. The study further concludes that there are key gender specific challenges faced in access and utilization of resources for bean production such a; shortage in labour, inaccessibility to credit services, limited land for production, limited access to information, lack of technical production knowledge, capital shortage, discrimination, sexual harassment, strict cultural values and beliefs.

Recommendations

In the context of bean production, there is need for the Ministry of Agriculture Animal Industry and Fisheries (MAAIF) to sensitize farmers on the importance of adopting soil enhancing technologies to enhance retention of the soil fertility.

MAAIF together with NARO should intervene and provide more extension services and training to farmers about correct input application and also supply farmers with improved bean varieties that are pests and disease resistant and high yielding traits.

The National Beans Programme concerned with carrying out research in the country need to intervene and have proper mechanisms of disseminating new varieties to farmers all over the country. This will not only improve plant resistance to diseases and pests but will also improve output.

Government should also develop better roads and market infrastructure in the area to attract private investors, as a way to reduce the distance farmers have to cover to the market. In so doing, bean farmers in the study area will become more efficient in production.

There is also need for the MAAIF and other stakeholders to come up with more initiatives through which farmers can access credit facilities at affordable interest rates and without the need for collateral, so that smallholder farmers can invest more in farming to increase their economic efficiency.

Smallholder farmers should also be encouraged to form effective producer groups, associations and networks which will help improve their bargaining power when purchasing inputs, accessing extension services as well as borrowing farming loans and marketing their produce.

Smallholder farmers should allocate more land to production of beans and improve on use of

recommended fertilizers, so as to enhance bean productivity.

To enhance production of beans, the farmers should within their existing land holdings, be encouraged to expand proportion of land under bean production and actively participate in farmer group's activities for easy access to markets.

Acknowledgement

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