

# Contributions of Eswatini National Agricultural Union on Small Scale Maize Farmers in Eswatini (Swaziland)

Ajay S. Singh<sup>1</sup>, Douglas Kibirige<sup>2\*</sup>, Mhlabane M. Mthobisi<sup>3</sup>

<sup>1,2,3</sup>Dept. of AEM, Faculty of Agriculture, University of Eswatini, Luyengo Campus, M205, ESWATINI

\*Corresponding author: [kibirige@uniswa.sz](mailto:kibirige@uniswa.sz) Tel. +268 25170594

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**Abstract-** In Eswatini, maize is the major crop grown mostly by smallholder farmers and contributor to the nation food basket. For increased and improved agricultural production and farmers' livelihood, Eswatini National Agricultural Union was established for improved member farmers' access to agricultural finance, insurance products and access to other agricultural related services. However, there is limited information about ESNAU's contribution to farmers' farm income, hence the study. A total sample of 104 farmers was selected in Hhohho region of Eswatini for this study and respondents were interviewed using a structured question. Descriptive statistics were used to generate results presented in this article. The sampled respondents can be characterised as mostly female (56%) with an average age of 51 years, mostly married (73%), attained high school education (64%), and mostly depend on farming as their source of income having about 11-20 years of farming experience (39%) and cultivating on 1-2 hectares of land. Further findings of the study indicate that ESNAU members access farm input credit were generating more revenues per hectare (E7843.75) compared to non-credit members (E5231.06). The major challenges faced by farmers included low out price, unreliable market, inadequate transport, shortage of government tractors and lack of training in maize production. Based on the suggestions presented in the results by small-scale rural farmers in Hhohho region, this study recommends that in addition to ESNAU efforts to serve farmers, all stakeholders including the government, NGOs, CBOs and farmers have to catalyse policies and programs that target to improve on farmers' maize market access, increased access to maize input subsidies, improved access to less costly tractor hire services, encourage more research and innovations in maize cultivars, encourage formation of farmers' cooperatives and more extension services for increased production and incomes among rural small-scale maize farmers.

**Keywords:** Maize productivity, Profitability, Agricultural credit, Agricultural training

## I. INTRODUCTION

Among the most grown crops by smallholder farmers in Eswatini includes maize. The crop is mostly grown on the Eswatini National land (ENL) on small home pieces of land mostly less than 2 hectares. The maize grown is mostly consumed at home and little surplus is sold within communities and the National Maize Corporation. The ENL is important for agricultural production in the country and 60% of this land is cultivated. For commercial purposes, most maize is grown on Title Deed Land (TDL). About 20% of total cultivated land in Eswatini is under production. Despite such a relatively huge land allocated to maize production, the country is still dependent on maize import from South Africa, and hence not self-sufficiency levels in maize production [1]. Maize is ranked third after wheat and rice in terms of the most popular cereals grown worldwide [2], and main food crop in Eswatini [3].

Small-scale farmers Eswatini are still locked in rudimentary farming techniques that result in poor yields.

Among such technologies include less use of farm inputs like fertilizers and agro-chemical important for improved crop production. There has been persistent decline in maize production among the small-scale farmers due to loss of soil fertility yet the farmers' purchasing power is low and cannot afford buying the fertilizer. Conservation agriculture could be one of the strategies of improving maize yields as attested by farmers growing other crops using the same approach are faring better. However CA requires large sums of land a key constraint to farmers in addition to inability to raise capital [4]. According to World Food Programme (2015), to reach food self-sustenance, Eswatini maize farmers have to attain about 172,170 tonnes of maize [5]. The country's maize supply deficit is a major challenge and a threat to food security, although there is an observed increase in maize production in 2016 of about 3951 metric tonnes compared to years before. To close the gap, South Africa imports the maize into the country and 98% of the maize import in the country comes from the same country [6]. Table 1 shows Eswatini maize imports NMC.

Table: 1 The Eswatini maize imports NMC

	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16
<b>April</b>	2424	2186	2820	5365	2467	0	2789	1603	3201	2077
<b>May</b>	4457	2908	2820	2410	4942	0	2013	2077	2239	2828
<b>June</b>	4495	3185	8024	2300	1788	0	0	848	334	986
<b>July</b>	117	216	5312	1115	1187	0	0	1023	2182	0
<b>August</b>	0	5395	1492	609	248	0	0	149	2127	0
<b>September</b>	0	1914	677	359	137	0	1436	0	3293	0
<b>October</b>	0	4308	721	3994	4357	0	3078	0	2777	1528
<b>November</b>	913	6802	4177	4172	251	1143	3805	219	3151	3959
<b>December</b>	1885	4835	5181	4890	2878	2377	772	1739	1100	5635
<b>January</b>	6268	2010	1939	3444	1868	1193	3669	1823	2660	1541
<b>February</b>	1645	3384	4380	2003	2184	2610	3327	2707	2755	3721
<b>March</b>	3379	1072	4498	3758	5758	3700	1876	2748	4627	5768
<b>Annual Total</b>	<b>25,583</b>	<b>38,215</b>	<b>42,041</b>	<b>34,419</b>	<b>28,065</b>	<b>11,023</b>	<b>22,765</b>	<b>14,936</b>	<b>30,446</b>	<b>28,043</b>

Source: NMC, 2016.

Some useful and jointly efforts have been taken by the government of Eswatini with parastatals and Non-governmental organization (NGOs) to develop the agriculture sector by initiating advanced approaches to improve agriculture production quality and quantity. One of the strategies adopted to propel maize production is through the subsidization of maize inputs which include fertilisers and maize seeds for maize farmers, and the government offers tractor services to farmers. One of Non-governmental organization which anchors is the Eswatini National Agricultural Union (ESNAU). ESNAU was established and support by the Eswatini Ministry of Agriculture (MoA) and the Southern African Confederation of Agricultural Union (SACAU). It was demand by farmers in 2007 at the National Agricultural Summit. At the summit, farmers strongly approved and recommends the establishment of an independent apex body that would represent farmers, promote and safeguard their interests. The numbers of individual farmers/rural producers benefiting from ESNAU are 10 468 predominantly small holder farmers, 30% female, 70% male, 5% youth [7].

The main objectives of ESNAU are to have a strong and vibrant farmers Union that is responsive to the members' interest and needs, and to maximize service delivery, to create suitable market linkages for farmers, improve their access to finance and insurance products and to create and strengthen value chains for their produce, to improve farmers' production and productivity, support diversification and build resilience against climate change, to improve members' participation in agriculture policy development and understanding of the agriculture policies as they relate to farming, food and nutrition security and further integrate women and youth mainstreaming in agricultural policies and national development [8].

Contributing towards maize production, ESNAU implements a maize block project that seeks to improve maize productivity for 160 smallholder farmers in high maize producing areas of the country. Through the project, ESNAU provides farming input loans to the beneficiaries of the project that are trained on production and business management. Through the support of the Ministry of Agriculture, farmers are mentored through production for effective crop management. At the harvesting stage, the beneficiaries repay their input loans through the harvest equivalent of the amount of the farming inputs received. Through the project implementation ESNAU supported 101 farmers with farming inputs. As repayment for the input loans, ESNAU collected 102 MT of white maize from the farmers, which was sold to the National Maize Corporation (NMC) at SZL2435.00/MT. ESNAU has lured attention from stakeholders like the National Maize Corporation who have indicated interest to partner with ESNAU in replicating the same model in other areas of the country. The NMC is willing to support farmers with farming inputs worth E70, 000.00 under the supervision of ESNAU [8].

Despite the significance of maize in Eswatini and huge investment are injected towards maize production, yields remain low on the other hand having imports scaling up as population increases. The low maize production in Eswatini though not outstanding at national level has clearly impacted food security in Eswatini such that about 50 000 people are estimated to be severely insecure. The government of Eswatini in collaboration with parastatals and Non-Governmental Organisations (NGOs) have initiated the responsibility to anchor small scale farmers in the production of maize by subsidizing and offering loans to fund farm inputs and also conducting multiple researches on newly advised farming methods and technology. This study serves to investigate small scale farmers on the productivity and profitability in maize

farming that could in turn serve as a solution to their needs to improve maize production and profitability in Eswatini. The objectives of this study were to examine the impacts of Eswatini National Agricultural Union (ENAU) on maize production through regression analysis.

## II. REVIEW AND LITERATURE

### Maize Production in Eswatini

According to FAO & WFP (2005), maize is the staple food of Eswatini and is the main crop grown by the vast majority of smallholder farmers, largely for subsistence purposes. After harvesting their maize, farming households normally store their food for own consumption [9]. Any surplus is sold to formal markets, such as the NMC, or through the informal sector. NMC is a state-owned enterprise, established in 1985 primarily to guarantee an all year-round competitive market for local maize producers. There are predominantly two prices of maize in the Eswatini maize industry. The formal price that is set by the NMC has over the years remained 25 to 30% lower than prices in the informal sector [10]. As maize is the staple food of Eswatini, its productivity is easily noticed such that, the slightest changes in maize productivity has an impact on the whole economy. It is

thus important to study the productivity of maize, and the factors that might contribute to its decline or increase [11]. Maize productivity in the country has been noticeably fluctuating over the years.

Magagula (2006), stated that the reason for these changes is due to lack of provision and adoption of improved technological information, market infrastructure, water resource development, credit and factor-price and other economic relationships [12]. On average, about 65800 hectares of land is under maize production in Eswatini. Each on average produces 94618 tonnes per year with a yield of 1.5 tonnes estimated about 90 per cent of the maize farms in the Swazi Nation Land farms [13]. Maize yields are dropping per year since 2001/2002 due to variability in weather conditions and changes in land use [14]. The shortage of local maize supplies continued to be the single biggest challenge despite an increase of 165% to 6341 metric tonnes received during the reporting period compared to 3951 metric tonnes received during the previous year. This resulted in the Corporation sourcing out 28, 043 metric tonnes of maize from South Africa which accounts for 98% of our maize supplies [6]. Table 1 presents the production of maize in the country from 2010-2016.

Table 2: Eswatini-AEZ Maize Production 2009/10–2014/15 (in tonnes).

	2010-11	2011-12	2012-13	2013-14	2014-15	5-year average
<b>Highveld</b>	36 437	31 315	31 440	38 821	32 887	<b>32 814</b>
<b>Middleveld</b>	33 127	32 056	32 738	48 097	39 548	<b>35 733</b>
<b>Lowveld</b>	12 532	9 273	12 994	19 081	6 646	<b>13 176</b>
<b>Lubombo</b>	2 589	2 774	4 762	12 872	2 542	<b>5 472</b>
<b>National</b>	<b>84 685</b>	<b>75 418</b>	<b>81 934</b>	<b>118 871</b>	<b>81 623</b>	<b>87 195</b>

Source: MoA, Eswatini, 2016 [15]

In continuation, Eswatini produced 33,000 tonnes of maize for the 2016-17 marketing season, down from 81,623 tonnes in 2015-16 (-60 per cent) and down from the five-year average (2011-2015) of 88,506 tonnes (-63 per cent). In terms of national requirements, Eswatini has only produced 27 per cent of its national maize requirement for the 2016-17 marketing season. The remaining 73 per cent (114,000 tonnes) respectively will need to be imported.

### Factors Affecting Maize Profitability

Several factors are responsible for maize profitability among small-scale farmers. Among the studies include the one carried out by Beintema *et al.* (2011) whose objective was to identify the determinants of maize production, productivity and profitability in Zimbabwe [16]. The broadly the study's main objective was to assess the responsiveness of maize supply to price and non-price determinants. The findings of the study indicated that price had no significant effect or explain significantly productivity variation among farmers. Determinants of maize supply response included access to credit, patterns of rainfall in the farming season, the demand for maize consumption and size of maize cultivated area. Another study carried out in Mazowe District of Zimbabwe, examined the profitability of small-scale farmers growing

maize. Findings of this study indicated that the drivers of maize profitability in the selected area included age of household head and selling produce to private buyers which had a positive and significant influence on profitability while fertilizer, chemical, and transport costs had a negative and significant influence on the same. Based on the results the study recommends the government through its various programs targeting agricultural development and food security to focus on smallholder maize production and marketing with the aim of improving its profitability [17]. In Kenya, a study by Onono *et al.* (2013) on response of maize production to economic incentives that include; higher producer prices, subsidization of inputs, provision of agricultural credit, research and extension services, construction and maintenance of roads, development of irrigation and water systems and other legislative, institutional and macroeconomic reforms found that maize production responds positively to both price and non-price factors [18].

In a similar country Malawi, a study by Tchereni and Tchereni (2013), both price and non-price factors were found to influence maize supply response. The results indicated that farmers allocate land to export crops mainly

basing on their previous allocation pattern rather than relative crop prices and foreign income only [19]. A similar study in Ohio State Nigeria analysed the factors affecting quantity of maize supplied. Marketing costs contributed significantly to agricultural household supply decisions. As recommendation, the study recommended policies that reduce marketing costs to serve as increasing food security in Nigeria. Adamson (2010), investigated the productivity of sugar cane production, mechanized food crop farming, rice production and maize farming respectively. Farmer's socio-economic variables were found to be significant determinants of agricultural production and profitability [20].

### III. METHODOLOGY

This study was conducted in the Hhohho region of Eswatini. The Hhohho is a region is located in the north western part of Eswatini from the north and running southwards to the centre, It has an area of 3,625.17 km<sup>2</sup>, a population of 282,734 (2007), and is divided into 14 constituencies. Being in the highveld, it has an average elevation of between 910 and 1830 metres above sea level and is characterised by a humid to near temperate climate. The type of climate is conducive for the growing of a variety of crops and higher yield are usually obtained due to the high rainfall and moderate temperatures. The major constraint to increased productivity is excessive leaching of nutrients, high soil acidity and low soil fertility. Maize grown as a monocrop (cropping system) is the dominant crop. The study employed both descriptive research design and qualitative statistical analysis. The primary data was collected using well structured, self-designed and pre-tested questionnaires that were administered through face to face interviews of randomly selected farmers from both beneficiaries (52) and non-beneficiaries (52). This observation was based on qualitative and quantitative type.

### Calculate Profitability

To compute the costs and returns to selected grown maize a budgetary technique was used by estimating the revenue, gross margin and the net farm income in each farmer in the population realized at the end of production process. Gross margin is the difference between the total revenue and total variable cost and profit (a residual of total cost from total revenue).

Gross margin (GM)  $\text{Gross Margin} = \text{TR} - \text{TVC}$

Return on Investment (ROI)  $= \text{GM} / \text{TVC}$

Where: TR=Total Revenue; TVC=Total Variable Cost

### IV. RESULTS AND DISCUSSIONS

#### Socio-economic characteristics

Socio-economic characteristic studies of any society are very dynamic to give understand to the type and nature of the farmer's livelihood. These assists in the understanding their qualities based on gender, age, education and many more characteristics of the selected population which distinguishes them from the others. Out of 104 respondents, 52 were credit beneficiaries and 52 were non-credit beneficiaries from ESNAU. Table 3 indicated that mostly maize farmers and beneficiaries are females as they are 8% more female beneficiaries than males. Overall, also they are more female maize farmers than males as they are 57 females and 47 males. Table 3 indicted that a majority of the maize farmers are above the age of 60 and between the ranges of 51-60. This may be because of the fact that most maize farms are in the rural areas hence most of the economic active segment of the population migrate to urban areas in search for jobs and better living conditions thereby farming being the only way to live for the senior citizens. As shown in table 2 that 31% of maize farmers are above the age of 60 this is further proven by the mean of both groups being above 50.

Table 3: Socio-economic characteristics of the farmer

Socio-economic Variable	Beneficiaries		Non Beneficiaries	
	Frequency	Percentage	Frequency	Percentage
<b>Gender</b>				
Male	24	46	23	44
Female	28	54	29	<b>56</b>
<b>Age (In Years)</b>				
20-30	01	01.9	05	9.6
31-40	09	17.3	12	23.1
41-50	12	23.1	12	23.1
51-60	14	26.9	07	13.5
> 60	16	30.8	16	<b>30.8</b>
Mean Age & Std.Dev.	53.19 years	13.04	50.15 Years	14.49
<b>Marital Status</b>				
Single	01	01.9	02	03.8
Married	33	63.5	38	<b>73.1</b>
Widowed	18	34.6	12	23.1
<b>Formal Educational level</b>				
Non Formal	05	09.6	02	03.8
Primary Level	16	30.8	10	19.2
High School	27	51.9	33	<b>63.5</b>
Tertiary or Above	04	07.7	07	13.5
<b>Household Size</b>				
1-5	18	34.6	26	<b>50.0</b>
6-10	32	61.5	22	42.3
>10	02	03.8	04	07.7
Mean & Std. Dev.	6.7	2.5	6.3	2.4

<b>Number of dependents</b>				
1-5	30	57.7	35	<b>67.3</b>
6-10	21	40.4	14	26.9
>10	01	01.9	03	05.8
Mean & Std. Dev.	5.5	2.3	5.1	2.4
<b>Major Occupation</b>				
Farmer	48	92.3	42	<b>80.8</b>
Employee	03	05.8	10	19.2
Others	01	01.9	00	00.0
<b>Source of Income</b>				
Farming	46	88.5	30	57.7
Salary	05	09.6	13	25.0
Others	01	01.9	09	17.3
<b>Farming Experience</b>				
1-10	19	36.5	19	36.5
11-20	16	30.8	20	<b>38.5</b>
21-30	08	15.4	09	17.3
>30	09	17.3	04	07.7
Mean & Std. Dev.	19.2	13.2	15.6	9.7
<b>Farm Size (Hectors)</b>				
1-2	44	84.6	51	<b>98.1</b>
3-4	07	13.5	01	01.9
>4	01	01.9	00	00
Mean & Std. Dev.	2.0	0.9	1.6	0.5

Source: Survey 2019

The majority of the participant farmers were married as they are 63.5% of CB and 73% of NBC, followed by widowed farmers (28.8%) and lastly single farmers who were 3%. This information reflect that most widowed farmers carry the burden of taking care of the family in most families hence farming is one way to make ends meets as they are above employment age. The results shows that most the NBC respondents are educated compared to CB as 14% NBC obtained tertiary education whilst for CB only 8% of them obtained tertiary education. In addition also the results show that mostly both groups have attained secondary level of education (52% of CB and 64% of NBC). The findings show that majority of the farmers attained High school or secondary education, this may be attributed to most people resorting to farming after failure to join higher level training institutions.

Most household had family members ranging from 6 to 10 people with a mean greater than 6 for both groups. In the Table 3, 50% of the NBC respondents had household sizes ranging from 1-5 members and 61.5% of CB respondents had family members ranging from 6-10. Moreover, results show that mostly the CB had on average large household size compared to NBC with a mean household size greater than NBC farmers. As shown in Table 3, CB had also the anticipated higher mean number of dependent of about 6 people and 5 dependants

among the NCB households. The CB recorded the highest number of dependents ranging from 1-5 whilst on the other hand most of dependents number among NCB households was ranging between 6 and 10 people. The most CB respondents (92.3%) and 80.8% of NBC respondents were farmers, respectively. Civil servants and traders formed the second largest percentage with 5.8% and 19.2% of CB and NBC, respectively (Table 3). This shows that most of the people that were interviewed are either farm owners or farm labourers. This information reflects that the majority of the participants in the study area practice agriculture as their primary occupation. The findings show that 57.7% NBC and CB 88.5% rely on farming as their source of income. The results show that maize farming is the only source of income. This may be due to high unemployment mostly in rural areas. The results showed that a majority of the farmers were cultivating on 1-2 ha of farming land and percentage wise, 84.6% of CB and 91.8% NBC indicated to own farm land ranging from 1 to 2 hectares. This may be because both the NBC and CB are practicing farming on the Swazi Nation Land and hence land sizes are almost equal. Very few farmers (1.9%) were cultivating on land greater than 4 hectares. The average farm size under maize cultivation was 2ha for CB and 1.60ha for NBC, this clearly shows that most of the maize farmers in the study area are small-scale farmers.

Table-4 Access to training

Variable	Beneficiaries		Non Beneficiaries	
	Frequency	Percentage	Frequency	Percentage
<b>Training Access</b>				
Yes	36	69.2	09	17.3
No	16	30.8	43	82.7
<b>Number of Trainings</b>				
0	16	30.8	43	82.7
1-5	35	69.2	09	17.3
6-10	01	01.9	00	00

Source: survey, 2019

The findings show that 69.2% of CB and 17.3% of NCB have accessed to training. This explains that CB is able to manage input and achieve higher yield and profits than NCB. The results also shows that most farmers have access to training provided whether by government and some other organisations such as farm chemicals, Seed Co, SEDCO and MoA. These training provided to smallholder farmers improved their knowledge on farming and propel the change of attitudes from traditional ways of farming to modern or more efficient ones. Change or adaptations to current technology of maize farming enables improvements in productions and profitability of maize farming.

The table below clearly shows that CB mostly attends training session compared to NCB provided by government and the farm input sectors of Eswatini. 62% of CB attended training sessions for 1-5 times whilst only 28.8% of them never attended one. On the other hand 17.3% of NCB attended training 1-5 times whilst 82.7

didn't attend to any. This huge difference is because ESNAU members or beneficiaries have an advantage that the organisation organises and invites them for training and closely monitors and assist its members.

#### Profitability analysis

The results in table 16 indicates that fertiliser costs account for a high percentage in both groups as they are 30.12% and 48.47% for beneficiaries and Non beneficiaries respectively. The second followed by the costs of seed and chemicals. Tractor hire and labour in both groups was equal because they were both charged at the same rate per hectare for both labour and tractor services. The results show that the total variable costs accounts for a high percentage from the total revenue which account for 58.1% which is lower compared to the credit non-beneficiaries which accounts for 90.93%. The results also shows that net returns for credit beneficiaries were higher compared to credit non-beneficiaries which is 39.23% and 9.07% respectively.

Table-6: Comparison of average revenue and variable costs of credit beneficiaries and non-beneficiaries.

	Beneficiaries	Percentage	Non beneficiaries	percentage
<b>Revenue</b>	7843.75	100	5231.06	100
<b>Variable costs</b>				
Fertilizers	2361.58	30.12	2540.70	48.57
Seeds	1188.86	15.16	1065.54	20.34
Chemicals	571.15	7.28	750.23	14.34
Tractor hire	300.00	3.82	300.00	5.73
Labour	150.00	1.91	150.00	2.87
Transport	195.00	2.48	250.00	4.78
<b>Total variable costs</b>	<b>4766.59</b>	<b>60.77</b>	<b>4756.47</b>	<b>90.93</b>
<b>Gross Margin</b>	<b>3077.16</b>	<b>39.23</b>	<b>474.59</b>	<b>9.07</b>
<b>ROI</b>	<b>0.65</b>		<b>0.10</b>	

Source: Survey, 2019

Table-9 indicate that major challenges faced by maize farmers in the Hhohho region are; market for maize is unreliable and produce at low prices (14.4% agreed and 85.6% strongly agreed). Low prices discourage farmers and need government intervention. Other challenges include lack of transport to send their produce to market, this is because infrastructure is poor such as roads which are dilapidated and eroded mostly caused by high rainfall especially in the Highveld. In addition, there is a shortage of government tractors due to their late arrival in the planting season as 57.7% agreed and 50% of respondents strongly agreed. Lastly, lack of training in maize production of respondent is another challenge as agreed (53%).

Table-9: Challenges affecting maize profitability in Eswatini

Challenges	SD	D	A	SA
Lack of access to credit	0.0%	51.0%	41.3%	7.7%
Lack of extension services	1.0%	63.5%	31.7%	3.8%
Low output price	0.0%	0.0%	14.4%	85.6%
Unreliable market	0.0%	0.0%	28.8%	71.2%
Shortage of government tractors	0.0%	27.9%	57.7%	14.4%
Lack of training in maize production	1.0%	35.6%	53.8%	9.6%
Inadequacy of transport	0.0%	2.9%	47.1%	50.0%
Lack of access to credit	0.0%	51.0%	41.3%	7.7%
Lack of extension services	1.0%	63.5%	31.7%	3.8%

Source: Survey 2019.

Table-10 indicated that to improve profitability of maize in Eswatini, 84.6% of respondents strongly suggested that there has to be an alternative market to sell their product at competitive prices to meet the ever inflating prices of farm inputs. Secondly, farmers suggested that there should be an establishment of more farmer cooperatives provision of training as far as maize production is concerned. Thirdly,

also government should consider a way to improve service delivery as far as the tractor service is concerned (67.3% agreed). There has to be an investment in research and development of maize farming to provide farmers with high yielding maize varieties and also an increase in government subsidy for maize farming.

Table-10: Ways to improve maize profitability in Eswatini

Challenges	SD	D	A	SA
Provide training	0.0%	5.8%	75.0%	19.2%
Provide market for maize	0.0%	0.0%	15.4%	84.6%
Increase subsidy on maize farming inputs	0.0%	21.2%	68.3%	10.6%
Loans from government with low interest	0.0%	21.2%	51.9%	26.9%
Provide more tractors	1.0%	7.7%	67.3%	24.0%
Provide high yielding maize cultivars	1.9%	5.8%	67.3%	25.0%
Increase number of extension officers	0.0%	26.9%	65.4%	7.7%
Provide research stations in RDA	0.0%	12.5%	51.0%	35.6%
Create more maize farmers cooperatives	0.0%	1.0%	16.3%	82.7%

Source: Survey 2019

## V. CONCLUSION

The results show that ESNAU farmers benefiting from farm input Credit (CB) earned more gross margins in maize production compare to farmers not benefiting from the same service. Low output prices, unreliable maize market, shortage of government tractors, lack of training in maize production and inadequate transport were the major challenges faced by ESNAU farmers. Provision of training, improved access to maize markets, provision of subsidies, provision of loans at low interest rates, more tractors, more high yielding cultivars, more extension officers and decentralising research stations in RDA were the major solutions suggested by farmers.

### Recommendations:

Based on the suggestions presented in the results by small-scale rural farmers in Hhohho region, this study recommends that in addition to ESNAU efforts to serve farmers in terms of input subsidies in form of credit, all stakeholders including the government, NGOs, CBOs and farmers have to catalyse policies and programs that target to improve on farmers' maize market access, increased access to maize input subsidies, improved access to less costly tractor hire services, encourage more research and innovations in maize cultivars, encourage formation of farmers' cooperatives and more extension services for increased production and incomes among rural small-scale maize farmers.

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### Authors Profile

**Dr. Douglas Kibirige:** Dr. Douglas Kibirige (PhD) is a Ugandan, holder of a PhD in Agricultural Economics-University of Fort Hare South Africa, MSc. in Agricultural and Applied Economics, and Bachelors of Agribusiness Management both obtained from Makerere University Kampala, Uganda. He holds a Diploma in Food Processing Technology of Uganda polytechnic Kyambogo currently Kyambogo University-Uganda. Dr. Kibirige first worked with the food industry after obtaining his Diploma in FPT as quality controller (QC) at Procta and Allan Cereal processing company in Uganda, and on completion of his Bachelor's degree in Agribusiness management he started working as a researcher in the department of agricultural economics at Makerere University where he gained more skills that made him a complete competitive researcher and consultant hired by both national and international organisations. During the same period he founded Kina Agricultural and Community Development Company Ltd (Uganda) participating in writing winning grant proposals and implementation. Also the company deals in agribusiness consultancy and rural development. When pursuing his PhD degree at the University of Fort Hare Dr. Kibirige was engaged in academic and non-academic consultancy work. Currently Dr. Kibirige is a Senior Lecturer at the University of Eswatini. As a consultant, he has worked with several international organisations like IFPRI & FAO-UN. He has supervised students at all levels from undergraduate to postgraduate. Additionally, he has published several papers in international journals. Further, he has participated in several winning grant projects at the University of Eswatini. Dr. Kibirige is a board member of reviewers in reputable international journals and several international professional organisations. Areas of interest include agribusiness and rural development, agricultural production economics, Food security and poverty studies, smallholder farmers' livelihood strategies, livestock and natural resource management.



**Dr. Ajay S. Singh:** Dr. Ajay S. Singh is an accomplished academic and researcher with almost 25 years of experience in teaching, research and management. Dr. Singh received his primary school education in Bihar, India and completed his intermediate studies (I. Sc.) from Uday Pratap Inter College, Varanasi, U.P., India. He obtained his Bachelor's degree and Master's degree from the Banaras Hindu University (BHU), Varanasi, India. He received his Ph. D. from the Institute of Medical Sciences, BHU, India; completing his doctoral thesis on 'Human Fertility Behaviour through Analytical Modelling' in 1992.



He worked as a Research Officer in the Indian Council of Medical Research (ICMR, India) Scheme in the Postgraduate Department of Pathology, S. N. Medical College, Agra, Uttar Pradesh, India for 'Oral Cancer Prevention Program' and also served as medical data analyst and worked as Investigator for WHO-SEARO project. He also worked as a Lecturer (Biostatistics) in the National Institute of Pharmaceutical Education & Research (NIPER), Hajipur, Bihar, India. Presently, he is working as a Senior lecturer in the University of Eswatini, Eswatini. He has supervised and co-supervised many undergraduate and graduate level students.

Dr. Singh has published more than research papers in several peer-reviewed international and national journals of repute and also prepared two course manuals for undergraduate students. He has made notable contributions to the health and agricultural research profession by serving on various committees and editorial boards of journals. Dr. Singh is a member of editorial boards of over half a dozen international journals and reviewer for many reputable international journals. He is also a member of several reputed professional organizations. He also worked for many non-governmental organizations.