



# Homegrown School Feeding Programme (HGSFP) and Agricultural Production by Small-Scale Farmers in Mwala Sub-County, Machakos County, Kenya

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**Abstract:** *The study examined the effect of Homegrown School Feeding Programme on agricultural production among small-scale farmers in Mwala sub-county of Machakos county, Kenya. A descriptive cross sectional design was adopted for the study targeting a population of small-scale farmers in farmers' organisations where 310 respondents were sampled. Stratified, simple random and purposive sampling techniques were employed to select the sample. Structured questionnaires, structured interview guides and focused group discussion guides were employed in data collection. Quantitative data was analysed using descriptive and inferential statistics. Means, percentages and standard deviation were calculated summarised in tables and presented in graphs. Multiple linear regression analysis was worked to determine relationship among the variables and extent of the relationship that existed. Qualitative data was categorised and analysed thematically. The findings revealed that homegrown school feeding had a positive effect on agricultural production. The mediating effect of World Food Programme had a small but positive effect on how homegrown school feeding influences agricultural production. Moderating effect of environmental forces had a reducing effect. The study concluded that the structured demand created in primary schools by homegrown school feeding has not stimulated agricultural production by small-scale farmers in Mwala sub-county to a large extent. The study recommends that the government of Kenya, through ministry of Education revises procurement procedures guiding food supply to schools to make them small holder friendly. Further, a segment of the food markets in schools should be reserved for the SSFs in farmers' organisations to help stimulate farmers to increase food production.*

**Keywords:** *Small-scale farmers, homegrown school feeding, agricultural production, market access, structured demand*

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## 1. Introduction

Countries are increasingly recognizing the importance of social protection measures in reducing and/or preventing poverty and hunger, and that linking social protection programs to agriculture through institutional procurement

can increase benefits even further, particularly for smallholders or family farmers (Aurino & Giunti, 2021). The School Feeding Program (SFP) is critical for achieving great education. A full stomach allows students to focus better during numerous school activities (Evaristo, 2015). School feeding programmes have been defined by the World Bank as "targeted social safety nets

that provide both educational and health benefits to the most vulnerable children, thereby increasing enrollment rates, reducing absenteeism, and improving food security at the household level" (WFP, 2012, p6). School feeding is the provision of food to school children, whose origin Tomlinson (2017) traces in the United Kingdom and the United States of America to the 1930s, with a focus on promoting children's growth. School feeding programs have become an important component of food assistance, disaster relief, and development efforts. It serves as a social safety net for children and contributes to the achievement of national development goals. Governments start school feeding programmes primarily for social protection, educational and health purposes. For example, in Kenya, a study conducted in 2008 in Mwala division, Machakos County concluded that school feeding programme improves the performance of pupils (Wambua, 2008). Another study by Obonyo (2009) in Yala division in Busia County contradicted the belief and expectations by concluding that school meals do not affect pupils' performance.

There is yet another dimension of school feeding programmes which is equally important. This is the link between school feeding and local agricultural production and its potential related benefits to the local economy and the incomes of small-scale farmers (SSFs), (Bundy *et al.*, 2009; WFP, 2013; Aigbedion *et al.*, 2012; PCD, 2012). This brings in the concept of Homegrown school feeding, which is a model of school feeding that purchases and uses food that is locally and domestically produced to feed the school children (Bundy *et al.*, 2009; Kiamba 2013).

Statistics show that high and middle-income countries started school feeding much earlier with the United Kingdom (UK) starting in 1906, while some low-income countries, especially in Sub-Saharan Africa (SSA), as late as in the year 2000 (WFP, 2013). School feeding programmes have been implemented in Kenya since the 1980 with the support of United Nations World Food Programme (WFP). Since its inception, the SFP has targeted food inequality in the most vulnerable areas of Kenya, including school districts in the arid and semi-arid lands (ASAL) and the informal urban slums of large cities such as Nairobi and Mombasa (Espejo *et al.*, 2009; Langinger, 2011). In Kenya the major goal of school feeding programmes was to promote child enrolment and retention in school, so assisting in the attainment of universal primary education (Bordi, *et al.*, 2002). The initiative relied significantly on foreign aid and management, both of which are frequently conditional (Langinger, 2011)

Past experience shows that countries do not seek to exit from providing food to their schoolchildren, but rather to transition from externally supported projects to nationally owned programmes. These are the homegrown school feeding programmes that are government-funded and more sustainable school feeding programmes. They

provide the perfect opportunity to strengthen links between school feeding, agricultural and community development (Gelli *et al.*, 2010). Homegrown school feeding is an approach that was identified by the Millennium Hunger Task Force as a quick win in the fight against poverty and hunger. In Africa, its genesis dates back to 2003, when African governments included locally-sourced school feeding programmes in Pillar 3 of the Comprehensive Africa Agriculture Development Programme (CAADP), which is part of the New Partnership for Africa's Development (NEPAD) World Food Programme (WFP) (WFP, 2018). Therefore in 2003 Home-Grown School Feeding and Health Programme was launched with the aim to link school feeding to agricultural development through the purchase and use of locally and domestically produced food in feeding school children (Bundy *et al.*, 2009; NEPAD & PCD, 2012; Drake *et al.*, 2012; Kiamba, 2013). This means that the HGSFP has twin objectives of education and agriculture development (Karisa & Orodho, 2014). The government of Kenya launched the homegrown school feeding initiative in 2009 in order to engage and empower the community in the provision of school food in order to encourage school access and retention of their children (Langat, Tabot & Rotumoi, 2020 citing Langinger, 2011).

This study stems from the fact that school feeding is an important social intervention whose dynamics have changed overtime to give rise to homegrown school feeding which is an important development idea. Home grown school feeding operates in an external environment whose forces moderate the outcomes of the programme. World Food Programme has been a major player in the provision of food to school children and so its involvement is likely to have a mediating effect on how homegrown school feeding affects agricultural production. From various studies it is clear that school feeding programmes have transitioned into homegrown feeding programmes. However, little is known about the link between homegrown feeding programmes and agricultural production which is one of the major motivators for the programme. This study sought to fill the gap with a particular focus on Mwala Sub-county in Machakos County in Kenya.

## 2. Literature Review

### 2.1 Theoretical framework

The Homegrown School Feeding programme theory guided this study. The Homegrown School Feeding Programme Theory was put forth by Bundy *et al.*, (2009) and explained by Espejo *et al.*, (2009) and Kiamba (2013). The theory suggests that homegrown school feeding deals with two programmes at the same time, agricultural development and school feeding. Linking agricultural production to a food-based programme such as school

feeding gives rise to homegrown school feeding. The HGSFP theory is based on three target groups, being the school children who are to be supplied with food; the small-scale farmers (SSFs) who carry out food production; and the community stakeholders cutting across gender dimensions who are involved in food preparation, security and getting the children to school.

With regard to the HGSFP theory, Espejo et al., (2009) argue that unlike the school feeding programme (SFP) which targets only school-age children, the HGSFP targets both the school-age children and the SSFs. This means that the HGSFP has twin objectives of education and agriculture development and it is therefore not only a safety net cushioning the community against adverse effects of food insecurity, but also a tool for development at the community level.

The HGSFP theory goes alongside a three-stage model of transitioning from SFP to HGSFP suggested by Espejo et al., (2009). The focus areas in implementation of the HGSFP include strategic procurement, agricultural development and institutional development (Espejo et al., (2009). Stage one is aimed at creating an enabling environment for SSFs to start accessing the school feeding market. Activities at this stage are focused on strategic procurement. Stage two is aimed at agricultural development of the SSFs. Effort in terms of investment needed rises to its highest level geared towards supporting agricultural development and market access for SSFs. Stage three is concerned with institutional and policy development, and is characterised by a strengthened position of the SSFs in the market.

## 2.2 Empirical Review

Homegrown School Feeding Programmes (HGSFPs) seek to link agricultural development through the purchase and use of domestically produced food. HGSF (and nutrition) programs are intended to stimulate local production by creating a stable demand for quality and safe food, stimulating local production, supporting the development of local skills, and combating malnutrition by purchasing the food required from local smallholder farmers and processors. HGSF programs can enhance chances for smallholder farmers to get access to markets and contribute to rural transformation by giving early assistance to local smallholder farmers to develop their capacity to provide a stable food supply (WFP, 2018). HGSF programs are described as cost-effective school feeding programs that use food grown locally by smallholder farmers, resulting in a triple win action that improves nutrition, school attendance, and farmer livelihoods (Development Initiatives, 2017). This way HGSFPs are providing a structured demand for agricultural produce (NEPAD & PCD, 2012). To successfully link school feeding to agricultural

production, HGSF has to focus on promoting agriculture development so that an increased demand for food by schools can be satisfied by purchasing local food produced by SSFs. For this to happen, activities have to be tailored to help SSFs increase productivity; increase market access; produce crops of better quality; adopt new technologies; manage natural resource bases; mitigate eminent risks and invest in a way that is sustainable (Espejo et al., 2009; Drake et al., 2012).

Previous studies have linked school feeding with local agricultural production as an opportunity for low-income countries to kick-start their transition from WFP assisted school feeding to nationally-owned more sustainable school feeding (Bundy et al., 2009). In 2009 NEPAD launched the HGSF pilot programme in 12 countries, being Cote d'Ivoire, Ghana, Kenya, Mali, Nigeria, Tanzania, Ethiopia, Malawi, Mozambique, Senegal, Uganda, and Zambia (NEPAD, 2009; Bundy et al., 2009; Espejo et al., 2009; Kiamba, 2013). Governments of African countries have started to explore HGSF as a mechanism to simultaneously tackle food insecurity, stimulate local agriculture, increase rural incomes, feed vulnerable children at school, and support education (Gelli et al., 2010). A recent study from Ghana demonstrates that homegrown school meals has a significant demand for agricultural commodities across food groups, which is important for encouraging production diversification (Singh & Fernandes, 2018).

Home Grown School Feeding (HGSF) was recognized in the 2017 Africa Agriculture Status Report (AGRA, 2017) as a critical intervention for allowing the development of resilient value chains for smallholder farmers. According to a study conducted in Nigeria by Appollm and Daniel (2021), school feeding programs stimulate local food production and increase farmer income by an average of (n=3.5), food is purchased locally, benefiting local farmers and the entire community, and the program's sustainability is increased by an average of (n=3.5). Furthermore, with a mean of (n=2.3), the researchers discovered that food vendors are fully integrated into the program, with local farmers providing them with the essential local materials for the meals, and school feeding programs provide ready-made outlets for agricultural produce (3.2). Farmers benefit from school feeding programs because they gain access to new markets. Farmers who do not have close access to markets for their produce gain an advantage. The connection between local agricultural products and school feeding programmes is a win-win situation (Appollm & Daniel, 2021 citing Bundy, Burbano & Grosh, 2011).

Kenya's agricultural production is dominated by SSFs who occupy nearly 60% of the total arable land. The SSFs account for 75% of the total agricultural output and about 70% of marketed agricultural produce in the country, and provide nearly all the country's domestic food requirements (GOK, MoA, 2010). Critics to the thought

frame on the benefits of HGSFPs to agriculture argue that most rural communities in ASAL lack the capacity to produce enough food to supply the high demand for food to schools. Most of these SSFs in the ASAL have limited capacity to produce adequate amounts of food due to harsh climatic conditions and also inadequate farm inputs (Espejo et al., 2009; USDA, 2009).

In their study to test the efficacy of the homegrown school feeding programme in Kinango sub-county, Kwale County Kenya, Karisa and Orodho (2014) concluded that the HGSFP had not achieved its objectives of stimulating the local economy nor financially empowering the community. The programme had not even encouraged local procurement of food from the local farmers as it was intended to. Instead funds released by the Ministry of Education to purchase food for school feeding benefited the cereal traders who supply food to the schools and not the local farmers in Kinango Sub-county. They also conclude that introduction of HGSFP had not stimulated the farmers in the area to grow more maize and beans to supply to the schools. The study further concluded that food security had not improved among the community. The locals still relied on food aid from organisations such as Red Cross, World Vision, and government relief and were not in a position to supply food to the schools.

For over 30 years, the World Food Programme (WFP) has emerged as the leading international agency supporting school feeding programmes in low-income countries. It works with other partners such as FAO, PCD, AGRA, World Bank and Global Child Nutrition Foundation (WFP, 2013). In an attempt to link school feeding to agricultural development, WFP's homegrown school feeding programmes included objectives such as to encourage improved production practices among SSFs; increase SSFs access to the school feeding market; increase direct purchase from SSFs; create an enabling environment for SSFs to access markets. To achieve these, WFP set to provide market information, promote supply and advocate for rules, regulations and incentives to make it possible for SSFs to participate in procurement (Espejo et al., 2009).

World Food Programme has also been supporting the agricultural sector through local food procurement. The Purchase for Progress (P4P) pilot initiative was a logical continuation of this local procurement that sought to maximize benefits for SSFs, particularly women by buying increasingly in a smallholder-friendly way (Espejo et al., 2009; WFP, 2014). Purchase for Progress (P4P) was a five-year pilot project of the WFP that worked to raise the proportion of food that WFP buys from SSFs. Findings from P4P pilot initiative were to shed some light on the main knowledge gaps in implementation of the HGSFP (GCNF& PCD, 2011). Amani (2014) in an unpublished report written for WFP noted that in Kenya, P4P did not operate in the ASAL areas due to low productivity in the areas. However the low-capacity farmers' organisations in

the area received P4P-style training from P4P implementing partners, including familiarisation with school procurement procedures.

Small Scale Farmers are often not equipped to supply food directly to schools as individuals for they lack transportation, infrastructure, storage facilities, and market-price discovery. However, when they form farmer organisations, cooperatives, confederations, and other networks, it increases their capacity to supply food. Recognising this, WFP through the P4P initiative works to determine which procurement approach best supports farmers, and how to balance risks and costs in optimising and transforming local procurement practices (GCNF & PCD, 2011).

In Kenya WFP has continued clarifying the procurement guidelines and drawing attention to the clause which allows institutions to waive competitive procurement procedures if quantities in question are less than 1 metric tonne. SSFs unfamiliarity with the procurement guidelines and inadequate community awareness of the market opportunities created by schools were identified as the primary challenges of this HGSF pilot by the P4P coordinator (Amani, 2014). The Farm-to-School (F2S) strategy, which is popular in industrialized countries, is similar to HGSF initiatives. F2S is a method that connects schools with local farms with the goals of delivering locally produced healthy foods in schools, increasing student nutrition, giving opportunity for health and nutrition education, and supporting farmers (FIC, 2018; Christensen et al., 2019).

Over 1.5 million children have been served at primary schools as part of the Ministry of Education, Science, and Technology's Home Grown School Meals (HGSM) program (Kiilu & Mugambi, 2021 citing Mungai, 2004). The situation has changed with regard to school feeding programme in general. In 163 countries, one out of every two kids (388 million) got school meals at the start of 2020 World Food Programme [WFP] (WFP, 2020). However, massive school cancellations caused by the COVID-19 epidemic robbed 370 million of those youngsters of daily meals by April 2020 (WFP, 2020).

Pre-COVID-19, two-thirds of African, American, and Southeast Asian countries supplied school meals (UNICEF, 2019). For decades, school feeding programs (SFPs) have been employed to help children, their families, and their communities. In the near term, they can serve as a social safety net for low-income families, address equality issues and "level the playing field," raise school enrollment rates, and minimize absenteeism (particularly among adolescent girls).

### 3. Methodology

This study adopted the descriptive cross-sectional design to collect data in one point in time and described the

phenomenon without manipulation (Geoffrey, 2019). The survey method was appropriate for this study as it made it possible to collect data on the practices in the HGSFP from a sample selected to represent a larger target population of small-scale farmers in Mwala sub-county. The target population for this study consisted of small-scale farmers in farmers' organisations in Mwala sub-county. There were five active farmers' organisations in Mwala sub-county with a membership of 1309 farmers in total. A part from the farmers, the study population included key

informants within the sub-county. These consisted of 45 head teachers in primary schools under school feeding in Mwala sub-county, 4 chiefs and 6 members of county assembly (MCAs). Representatives from the ministry of education, ministry of agriculture and from WFP (1 representative per category) in Mwala sub-county formed part of the study population. The study population consisted of a total of 1367 persons from which the sample population was obtained as shown in table 1.

**Table 1 Sample size for each stratum in the study population**

Stratum Name	Proportion in study Population	Stratum sample size
Farmers in farmers' organisations	1309	297
Head teachers of primary schools under school feeding	45	10
Chiefs	4	1
MCAs	6	1
Representative MoE	1	1
Representative MoA	1	1
Representative WFP	1	1
<b>TOTAL</b>	<b>1367</b>	<b>312</b>

The desired sample size ( $n$ ) was calculated using a formula developed by Yamane (1967) and recommended by Israel (1992).

$$n = \frac{N}{1 + N(e)^2}$$

Where;

$n$  = the desired sample size

$N$  = the target population

$e$  = level of precision. A 95% confidence level and  $p=0.5$  is assumed.

$$n = \frac{1367}{1 + 1367(0.05)^2}$$

$n=310$

The desired sample size was 310.

The study employed both probability and non-probability sampling designs. In the probability sampling, the researchers used stratified and simple random sampling methods. Stratified sampling was used to categorise the respondents into various strata (Kothari, 2012). These categories included small-scale farmers in farmers' organisations, head-teachers of primary schools under school feeding, chiefs in locations where farmers' organisations exist and members of county assembly (MCAs). Purposive (non-probability) sampling made it

possible for the researcher to select a sample that could provide the data required as the items for the sample were selected deliberately by the researcher (Babbie, 2010). In this study, representatives from the WFP, the ministry of Education and ministry of Agriculture were purposively included in the sample as they were key informants with regard to the HGSFP and they were very few in the population.

Data was collected using questionnaire, interview guides and focused group discussion. The questionnaire had mainly close-ended questions and was for the small-scale farmers. Statistical analyses were completed using the statistical analysis software IBM SPSS Statistics 22. Data from questionnaires was coded and entered into SPSS. Quantitative data was analysed using descriptive statistics of means, percentages, standard deviation. Multiple linear regression analysis was worked to determine relationship among the variables and extent of the relationship that existed.

## 4. Results and Discussion

This section presents study findings and a discussion. Demographic information is presented followed by findings relating to the research objectives.

**Table 2: Demographic Data**

Characteristic	Description	Frequency	Percentage
Gender	Male	84	31.1
	Female	186	68.1
Education	Primary	198	72.3
	Secondary	60	22.2
	College	12	4.4
Age (years)	20-35	126	46.7
	36-50	54	2.0
	51-65	78	28.9
	66 and above	12	4.4

Table 2 shows that majority of the respondents were females at 68.1% while males were at 31.1%. Respondents from the interviews also stated that it is women who are more involved in production work on the farms. Gollin (2014); NEPAD (2014) and FAO (2009) have stated that in Sub-Saharan Africa women form 70% of the SSFs and are hence a very strong force in food production.

As per the age of the respondents, majority of them were those of age 20-35 years at 46.7%, 51-65 years were next at 28.9%, and above 66 were the least at 4.4%. This indicates that majority were young and energetic of age between 20-35 years. Most likely, young farmers in this group are resource poor and farming might not have been their activity of choice but they engage in it due to lack of formal employment. Inadequate resources can hinder them from engaging in better yielding agricultural production despite the farmers being young and energetic. The proportion of farmers in the age bracket of 35-65

years 28.9% is significant. It gives the indication that, the agriculture sector in Mwala Sub-county is composed mainly of elderly farmers. Given that this group of people is influential in decision making, then the age factor is likely to affect the way the SSFs respond to new interventions in the community, including HGSFP (Moussa *et al.*, 2011; Burton, 2013)..

As for the level of education, majority of the respondents at 73.3% attained primary level, followed by those with secondary level at 22.2% and those with college level at 4.4%. Muzari *et al.*, (2012) found out that most small-scale farmers in SSA are ignorant and illiterate which makes it very difficult for them to take up new technology. The fact that majority of the respondents are of low education level would be a reason explaining the difficulty facing implementation of the HGSFP in the area and the low level of programme success.

**Table 3: Farm sizes**

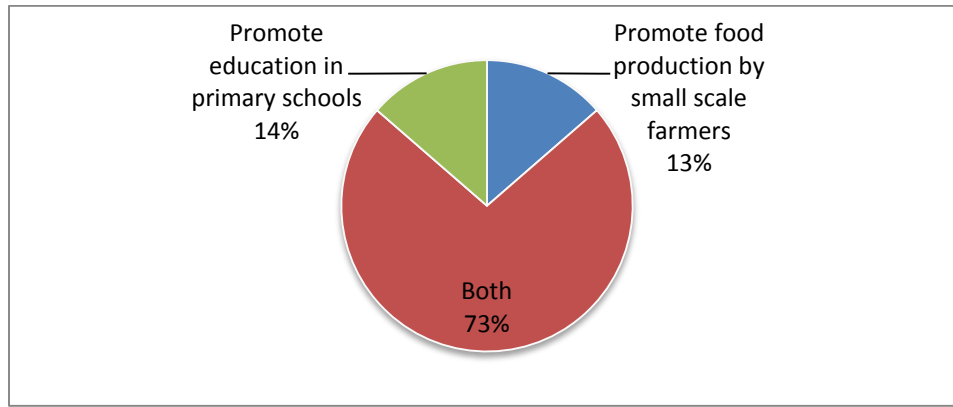
Size	Frequency	Percentage
<b>1.0-4.0</b>	<b>182</b>	<b>67.4</b>
<b>5-9</b>	<b>74</b>	<b>27.4</b>
<b>10 and above</b>	<b>14</b>	<b>5.2</b>

Table 3 shows that majority of the respondents at 67.4% owned farms of between 1.0-4.0 acres. These findings show that the SSFs in Mwala sub-county displayed typical characteristics of a majority of small-scale farmers in SSA. Afeyo (2015); AGRA, (2014); NEPAD (2009) have stated that SSFs in Sub-Saharan Africa cultivate small parcels of land which are degraded and have no access to reliable irrigation. That is one of the main characteristic feature of production systems of smallholder farmers is small-scale holdings (< 2 hectares). Farm size affects

agricultural production of farmers as it determines the amount of farm inputs and even uptake of technology.

#### **4.1 Aim of Homegrown School Feeding Programme**

The respondents were asked to indicate the aim of homegrown school feeding programme and they indicated as shown in the figure 1



**Figure 1: Pie-chart on aim of homegrown school feeding programme**

Figure 1 shows that majority of the respondents at 73% indicated the aim of homegrown school feeding programme as both to promote primary education and food production by SSFs in Mwala sub-county, Kenya. Farmers in FGDs responded that they were aware of the existence of the HGSFP in primary schools in Mwala Sub-county but they did not quite understand how they were to benefit as farmers. This is an indication that the farmers lacked clarity on their central role in implementation and success of the HGSFP. The finding agrees with Karisa and Orodho (2014) who reported that majority of the SSFs in Kinango Sub-county of Kwale County were not aware that the schools under school feeding were a possible market for their farm produce. Ambiguity in their understanding of the aim of the programme could explain the reduced rate of success of the programme in stimulating agricultural production. It is also a pointer to the manner in which the programme was conceived and introduced to the SSFs.

A key informant from WFP responded that aim of HGSFP was to link SSFs to the schools which are part of the structured markets among other available markets. These findings are in line with Bundy *et al.* (2009); NEPAD & PCD (2012); Drake *et al.* (2012); Kiamba (2014) who have stated that HGSFP was launched with the aim to link school feeding to agricultural development through the purchase and use of locally and domestically produced food in feeding school children.

## 4.2 Homegrown School Feeding Programme on food Production by Small-Scale Farmers

Respondents were asked to indicate on a scale of 1-5 the effects of the homegrown school feeding on various indicators of agricultural production and they responded as in the table 4.

**Table 4: Distribution by homegrown school feeding programme on agricultural production**

	N	Mean	Std. Deviation	Std. Error Mean
The size of land under crop cultivation	270	3.49	.887	.054
Variety of food crops cultivated	270	3.58	.858	.052
Amount of food produced	270	3.16	.870	.053
Income	270	2.96	.990	.060

Table 4, shows that mean of the variety of food crops cultivated was ( $3.5 \leq \text{mean} \leq 4.0$ ,  $SD \leq 1$ ) which is an increase as per the Likert scale used. The score shows that majority of the respondents stated that the variety of food crops they cultivate increased with introduction of HGSFP. On the food crops being cultivated by the SSFs in Mwala sub-county, the findings indicated that majority of farmers cultivate green grams, sorghum, maize, beans, vegetables, finger-millet, pigeon peas, mangoes and cassava. Most of these crops being produced are drought

resistant and hence suitable for this particular ecological zone as it lies in the arid and semi-arid region.

Size of land under crop cultivation and the amount of food produced had ( $3.0 \leq \text{mean} \leq 3.5$ ,  $SD \leq 1$ ) which showed a slight increase. It indicates that for majority of the respondents, the size of land under crop cultivation and the amount of food they produce increased slightly with introduction of HGSFP in the area. Most farmers in a FGD responded that the food they produce is not even sufficient

for their own consumption and so they have not been able to aggregate enough to supply to schools. A few of them who produce more than they need, sell to cereal traders at the shopping centres in the area. The key informants also stated that food production by SSFs in the sub-county was still very low such that even cereal traders who supply food to schools for school feeding have to source for food from outside Machakos County. So it means that HGSF programme has not stimulated farmers to increase agricultural production as predicted by Bundy et al., (2009) in the theory of homegrown school feeding. Espejo *et al.*, (2009) and Drake *et al.*, (2012) have stated that to successfully link school feeding to agricultural production, HGSF as to focus on promoting agriculture development so that an increased demand for food by schools can be satisfied by purchasing local food produced by SSFs.

Effect of HGSFP on income of farmers had ( $2.5 \leq \text{mean} \leq 3.0$ ,  $SD \leq 1$ ) which indicates that for majority of the respondents their income had not changed with the introduction of homegrown school feeding programme. The theory of change for homegrown school feeding (Sumberg & Sabates-Wheeler, 2011) posits that HGSFP creates an additional demand for food that has the capacity to be satisfied by “local” SSFs. The increased market could encourage increased inputs into productivity-enhancing technologies and practices which will in turn

improve local agricultural production for SSFs. This will have an impact on the broader local economy. However, findings from the study indicate that the income of the farmers had not changed, which means that the additional demand created by introduction of HGSFP had not worked to increase agricultural production by the SSFs and in turn their income from their farming has not changed. This finding agrees with Espejo *et al.*, (2009) argue that while the benefits of offering SSFs access to markets are difficult to estimate, an increase in income is expected. There is very little information of how HGSFPs would fair in low-income countries that experience vulnerability to food insecurity, constraints to food production, low institutional capacity and thin or volatile food markets.

The regression coefficients on Table 4 indicate that the effect of homegrown school feeding on agricultural production by small-scale farmers was positive with a coefficient of 0.419. The effect was significant at  $P\text{-value} < 0.05$ . The finding means that introduction of homegrown school feeding in Mwala sub-county worked to positively affect agricultural production by the small-scale farmers. The effect, though positive, was not of a large magnitude. The finding is in tandem with Sumberg and Sabates-Wheeler (2010) who have argued that on its own HGSFP cannot automatically result in stimulating SSFs to increase food production.

**Table 5: Regression Coefficients**

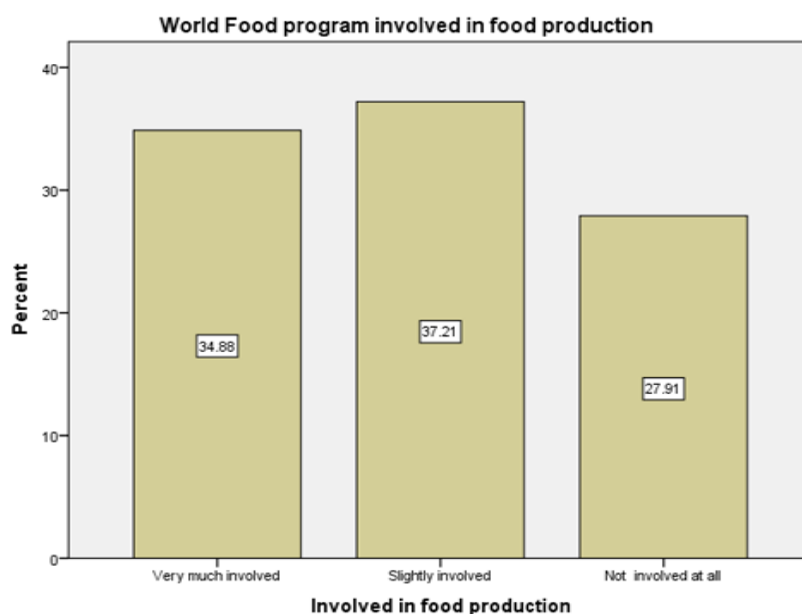
Model		Unstandardized Coefficients		Standardized	T	Sig.
		B	Std. Error	Coefficients		
1	(Constant)	1.130	.241		4.696	.000
	Home Grown	.419	.068	.409	6.180	.000
2	(Constant)	1.014	.273		3.710	.000
	Home Grown	.473	.090	.461	5.233	.000
	Homegrown*WFP	.010	.011	.079	-.896	.001

a. Dependent Variable: Agricultural Production

### 4.3 Involvement of World Food Programme in Homegrown School Feeding

The respondents were asked to indicate the extent to which World Food Programme was involved in food production by SSFs in Mwala sub-county and they responded as in figure 2.





**Figure 2: Extent of Involvement of World Food Programme in food production**

From figure 2, 34.88% of the respondents indicated that WFP was very much involved in food production, 37.21% that WFP was slightly involved and 27.91% that WFP was not involved at all in food production by SSFs in Mwala sub-county. A key informant from WFP stated that involvement of WFP in HGSFP was at the point of creating market access linkages for the SSFs and not at the point of food production. Farmers in a focused group discussion stated that WFP had not worked with them substantially in food production.

#### 4.4 World Food Programme involvement in Agricultural Production

The respondents were asked to indicate the extent of their understanding on how WFP has been involved in various aspects of agricultural development of the SSFs on the scale of 1=not involved at all, 2=less often involved, 3=often involved, 4=mostly involved and 5=always involved. Their responses are given in table 5.

**Table 5: World Food Programme involvement in Agricultural Production**

	N	Mean	Std. deviation	Std. Error of Mean
Purchase of food from small-scale farmers	270	2.22	1.399	.085
Streamline procurement procedures	270	2.24	1.569	.095
reduce risk of aflatoxins	270	2.36	1.496	.091
Promote women participation	270	2.98	1.258	.077
Purchase from women farmers	270	2.00	1.195	.073
Linking of small-scale farmers to schools	270	1.98	1.360	.083
Linking of SSFs to other markets	270	1.89	1.289	.078
Controlling quality of crop produced	270	2.13	1.502	.091
Facilitating access to credit	270	2.00	1.508	.092
Training in best farming practices	270	1.98	1.440	.088
Training in management of farm records	270	2.22	1.593	.097
Training in price negotiations	270	2.22	1.714	.104
Providing farm inputs	270	1.76	1.216	.074
Offer training on modern technology	270	2.00	1.463	.089

From table 5 all the statements had ( $1.5 \leq \text{mean} \leq 2.5$ ,  $SD \leq 2$ ) which means that according to the respondents WFP was less often involved in all the areas of food

production by SSFs. A key informant from WFP stated that, the aim of WFP in working with the SSFs in Mwala sub-county and all other counties in the ASAL region was

to create market access linkages and not food production. The market linkages were not restricted to primary schools under school feeding but included linking the farmers to institutions such as hospitals, hotels and even industries such as East Africa Breweries Limited (EABL). This finding is in line with GCNF & PCD (2011) who stated that WFP was involved in mobilising SSFs to form farmers' organisations to enhance their capacity to access markets. WFP supplied infrastructure, quality-control assistance, financial credit, research, advocacy, and training in management and best practice farming techniques.

An informant stated that WFP introduced the Purchase for Progress (P4P) programme which purchased food from farmers after harvest. In a focused group discussion, farmers responded that WFP worked with them to get market for their crops through the P4P programme in which WFP purchased their produce. The respondents stated that the P4P programme served them well as they got paid immediately for food purchased from them. These findings are in agreement with the argument of GCNF & PCD (2011) who state that P4P worked to raise the proportion of food that WFP buys from SSFs and sought to improve smallholder farmer well-being through food purchases. However, Lentz and Upton (2016) found no evidence of increased income, increased food consumption scores or increased crop value as a result of the P4P programme among SSFs in Tanzania. Likewise, Amani (2014) who on evaluating the P4P stated that in Kenya P4P did not operate in the ASAL areas due to low productivity. However, the low-capacity farmers' organisations in the area received P4P-style training from P4P implementing partners, including familiarisation with school procurement procedures.

In an effort to link SSFs to the HGSF market, the key informant stated that WFP worked with the ministry of Education (MoE) in development and validation of procurement guidelines of the homegrown school meal programme. The guidelines have a section that is smallholder friendly to enable the SSFs to access the school market. But overtime it has been realized that the SSFs are not accessing these school markets because the procurement procedures are too stringent and largely not smallholder friendly. Also most head teachers of primary schools under school feeding have already on-going agreements with cereal traders who supply the schools with food which locks out the SSFs in farmer groups. The farmers also responded that WFP had worked to link the farmers in farmer groups to supply food to schools under school feeding. So far, they had not supplied as they have not met the requirements set by the MoE. These findings are in agreement with those of Amani (2014) who found out that WFP familiarised SSFs with school procurement procedures but still the SSFs had not been able to supply food to schools. Amani (2012) further states that when schools invited tenders from farmers' organisations, the requests were not widely distributed, some schools sold

bid forms at high prices and others asked for kickbacks. The schools did not follow the procurement guidelines and most were not transparent.

## **4.5 Mediating Effect of World Food Programme on how Homegrown School Feeding influences Agricultural Production**

The regression coefficient for the mediating effect of WFP on HGSF is 0.010 at  $p\text{-value} < .05$ . The finding means that WFP has a small but significant positive effect during mediation on how homegrown school feeding programme influences agricultural production by SSFs in Mwala sub-county. The value of 0.01 at  $p\text{-value} < .05$  is lower than 0.419, the coefficient for direct effect of HGSF without mediation. Also findings from this survey show that WFP did not work directly with SSFs but through partners who had the capacity to work with the SSFs to help increase food. The findings agrees with GCNF & PCD (2011) who argue that interaction of WFP and the SSFs was not at the point of food production but at creating market linkages for the produce from their farms and training on post-harvest technologies to help reduce food wastage after harvest. All these combined must have limited the extent of mediation of WFP on how HGSF influenced agricultural production by SSFs.

## **5. Conclusion and Recommendations**

Introduction of HGSFP to Mwala Sub-county has not achieved its goal of stimulating an increase in agricultural production by the SSFs in the study area. Farmers as individuals or in farmers' organisations have not been able to supply food to schools as was the intended aim of the HGSFP intervention. Hence they have not benefited from the structured demand in the schools which then means that introduction of HGSFP in Mwala sub-county has not acted to stimulate SSFs to boost agricultural production. The study concludes that farmers lack proper information on the intended benefits of the HGSF. Further the SSFs are faced with a situation of low food production to the point that the food is not sufficient for their consumption.

This study also concluded that the major constraints SSFs have faced in accessing the school structured market are the stringent procurement procedures in the schools set by the MoE. The set procedures have made it difficult for the farmers to supply food to the schools. Instead the farmers sell their produce to the cereal traders at the shopping centres at very low prices most times immediately after harvest. WFP involvement to create market access for the SSFs and streamline procurement procedures in the schools which is the largest and ready market has not yielded results for the farmers as yet.

Based on the findings, the study recommends:

1. For HGSF to act to stimulate increased food production significantly, the government of Kenya through ministry of Education revises procurement procedures guiding food supply to schools be smallholder friendly.
2. A segment of the food markets in schools should be reserved for the SSFs in farmers' organisations. For example, school boards should report the volumes of food procured from farmers' organisations on a yearly basis. They should also have a policy that gives SSFs an opportunity to sell and not just relying on other marketers.
3. The WFP and the government of Kenya should carry out a detailed evaluation of the homegrown school feeding programme to identify areas of weakness in structure. This will facilitate re-engineering of the programme operations to increase efficiency in achieving set objective of increasing food production by local farmers.
4. The Government should work closely with schools through the Ministry of Education to ensure the tendering process is streamlined and monitored to avoid manipulation and corrupt practices like some schools selling bid forms and disadvantaging the tendering process. Proper distribution needs to be guaranteed.
5. For future research, the model used in inception and implementation of the programme should be analysed so as to find why it has not achieved its aim of linking agricultural production to school feeding. There is also need to create an enabling environment to allow farmers in farmer groups to supply food to schools under school feeding.

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