

ASSESSING THE VIABILITY OF PRODUCING VITAMIN-A ORANGE FLESHED SWEET POTATO FOR INCOME GENERATION IN KAUNGA AND KAMBOSHA AGRICULTURE CAMPS, KAPIRI MPOSHI DISTRICT.

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Abstract

The purpose of this study was to assess if growing vitamin A Orange Fleshed Sweet Potatoes can help reduce poverty among poor rural farmers.

This research was conducted in Kaunga and Kambosha agriculture camps located in Kapiri Mposhi District of Central Province. To select the household respondents, simple random method was used. Using the questionnaires, the researcher conducted a door to door, interview for all the selected household respondents to ensure that every response given was not influenced by other respondents. With every response noted on the questionnaires.

According to research data 2016, 74% of households were least on the income table, as of 2011/2012 farming/marketing season, at time of adoption, while as at 2015/2016 season only 71% were still at the same level. This translated in to 3% of households whose income levels had improved. Efforts were made by International Potato Center to create awareness for commercialization of Orange Flashed Sweet Potatoes, both in Kapiri Mposhi District and the surrounding town. With promotional messages disseminated and cooking demonstration activities conducted, giving Orange Fleshed Sweet Potatoes farmers reasonable options for markets offering better prices for their produce. Compared to the local varieties, Orange Fleshed Sweet Potatoes was being bought at K4 to K5 per kg by Super markets and K2 per Kg at local markets (main markets, road side markets and community under 5 centers). While local varieties were being sold at K1. 70n per kg in various local markets. However, only 23% of respondents felt the awareness levels for Orange Fleshed Sweet Potatoes were good, while the majority 37% and 40% respectively rated awareness to be fair and poor.

Key words: Orange Fleshed SweetPotato (OFSP), Market, Income, Price, Awareness

1.0 INTRODUCTION

The vitamin A orange Sweet potato is a food crop that is grown globally and is increasingly gaining recognition, because of the many important benefits and role it continues to play in improving household and national food security, health and livelihood of poor families in sub-Saharan Africa. The orange fleshed type is particularly rich in β -carotene, the most important pro-vitamin A carotenoid. Source; cipotato.org

The crop can be grown with little or no fertilizer and is widely grown by small scale farmers across Sub-Saharan Africa. It is environmental friendly and is reported to have short maturity period of about 3 months, making it a very strategic crop for addressing food insecurity and income generation, as it can be grown twice a year.

Lack of income generating activities in rural poor farming households is a major concern for the Zambian government and globally. Households without a steady income are the poorest world over and pose a great challenge to governments and international organizations that work tirelessly to find solutions to this challenge. And looking at the orange sweet potato it could be a solution to improving income for rural poor farming households in Kapiri Mposhi and Zambia as a whole.

2.0 STATEMENT OF THE PROBLEM

According to World Bank /Central Statistical Office Zambia, Mapping Subnational Poverty in Zambia Report 2015. Indicates that poverty incidence in urban areas was fairly low (between 22% and 34% Lusaka and Copperbelt respectively), whereas in the rest of the country, which is dominated by agriculture, poverty rates are greater than 70%.

Based on the number of poor people, Kapiri Mposhi ranks first at constituency level, with a total of 175,505 people living below the poverty line. While at District level it ranks number 10, with 173,557 poor people.

This in simple terms simply means that Kapiri Mposhi district has the highest number of low income farming households, because the majority of the residents are small scale farmers.

3.0 PURPOSE

The purpose of this research document is anchored on the hope that its findings might reveal information on the viability of producing vitamin A orange fleshed sweet potato for income generation and perhaps suggest the measures on the way forward.

Objectives

The specific objectives were as follows;

- To evaluate the income transition of some farmers following the introduction and growing of orange fleshed sweet potatoes.

- To assess the awareness levels on using vitamin A orange sweet potato as an income generating product other than nutrition purpose.
- To evaluate strategies that can help in production of vitamin A orange sweet potato for income.

4.0 LITERATURE REVIEW

In Bangladesh, Orange Fleshed Sweet Potato has impacted positively on the income of poor farming households. A 50 years old woman was able to realise US\$156 (K1560 zmw) in seven months, and was able to invest in goats and household items with the revenue she realised from sweet potatoes vines. In addition made a little saving and starting her own business, which earned her the respect of her community, and more importantly reduced her dependency on her son and daughter-in-law. Source: cipotato.org

In addition the (Health Farmer Wealthy Nation Magazine 2016), also reported how farmers' income in Rwanda have improved through vitamin A orange sweet potato production. One of the farmers narrated how OFSP income helped her acquire many pieces of land, built a house, bought livestock and take care of their family.

The (African Potato Association 2015), reported how a beneficiary farmer, of Orange fleshed Sweet Potato varieties in Eastern Province of Zambia, managed to buy a second hand vehicle from proceeds of OFSP. The farmers' experience was that, sweet potato was providing him and other farmers with an income earlier than the maize, as sweet potato is harvested early with a longer harvesting period.

Further a research that was conducted in Nigeria, (Soniia David 2015), showed that farmers valued sweet potato for its short maturity period, yields, and marketability. Women were more likely to rank sweet potato highly as a source of income compared to men.

With reference to (International Potato Centre 2015), improved varieties of Orange Fleshed Sweet Potatoes have higher yields, compared to local varieties, the varieties were developed in Mansa by the Zambia Agriculture Research Institute (ZARI). These varieties have a yield ranging from 19 tonnes per hector to 25 tonnes per hector, against the overall national average of 5.8t/ha for sweet potato.

5.0 RESEARCH DESIGN

Simple random selection was used to select respondent, among those that were engaging in Orange Fleshed Sweet potato production, and sample size of respondents was 30. Using the questionnaires, door to door interviews were conducted for all the selected household respondents to ensure that every response given was not influenced by other respondents.

The study focus areas were Kaunga and Kambosha Agriculture Camps both found in Kapiri Mposhi District of Central Province. Kapiri Mposhi had a population of 240, 841 according to Central Statistical Office Zambia Census 2010. The 2 camps were chosen because of the community members

involvement in Orange Sweet Potato production. Hence, it proved to be the best area for the researcher to conduct the study.

The Mixed Methods research design was used simply because it involves both qualitative and quantitative kind of research designs. Hence, it was ideal to combine the 2 designs to ensure that information collected using one design is complimented by the other for quality purposes of information obtained.

Questionnaires which contained open and closed ended questions were used as instruments for data collection.

The Data were analysed qualitatively and quantitatively, and processed using Microsoft excel and SPSS. Frequency tables, pie charts and graphs were used to interpret the data. A summarized narrative reports of the data was produced.

6.0 FINDINGS

6.1 Background information

Figure 1.0 Percent distribution of distribution per camp

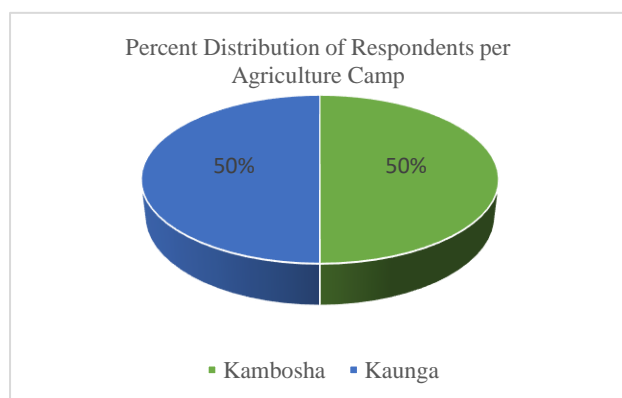


Figure 1.0 highlights the percent of respondents per Agriculture camp, both camps produced equal number of respondents of 50% each.

Figure 2.0 Percent distribution of gender of respondents

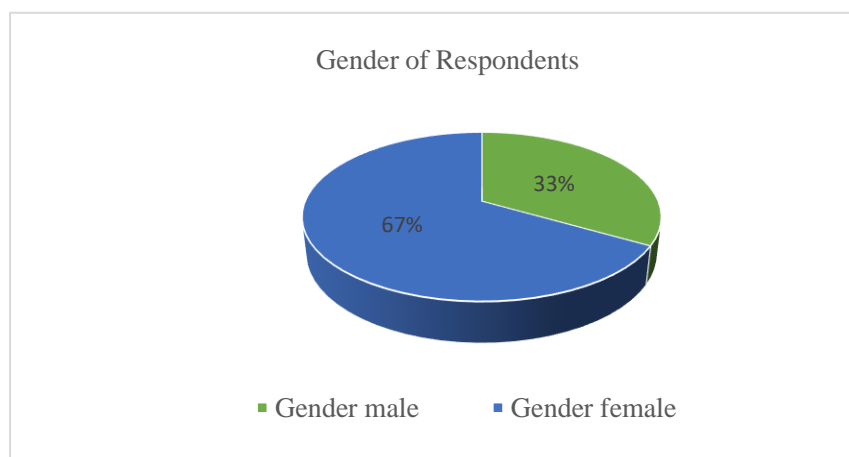


Figure 2.0 represents percentage distribution by gender for respondents in both Agriculture camps, the figure clearly indicates female were the majority accounting for 67% while male were 33%. The researcher did not deliberately take a bias toward female. The research targeted Vitamin A

orange sweet potato famers or producing both Orange Fleshed SweetPotato and lcal SweetPotato

varieties.

Figure 3.0 Percentage distribution of reasons for adoption by respondents

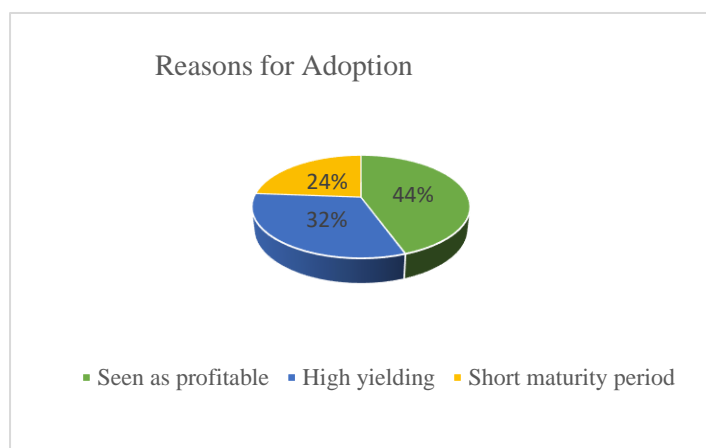


Figure 3.0 gives a description of respondents reasons for adopting to produce Orange Fleshed Sweet Potato. The number one reason that was given was, Seen as profitable 44%, followed by high yielding and short maturity period at 32% and 24% respectively. This was after respondents were asked why they decided to adopt Orange Fleshed Sweet Potato production?

Figure 4.0 most preferred variety

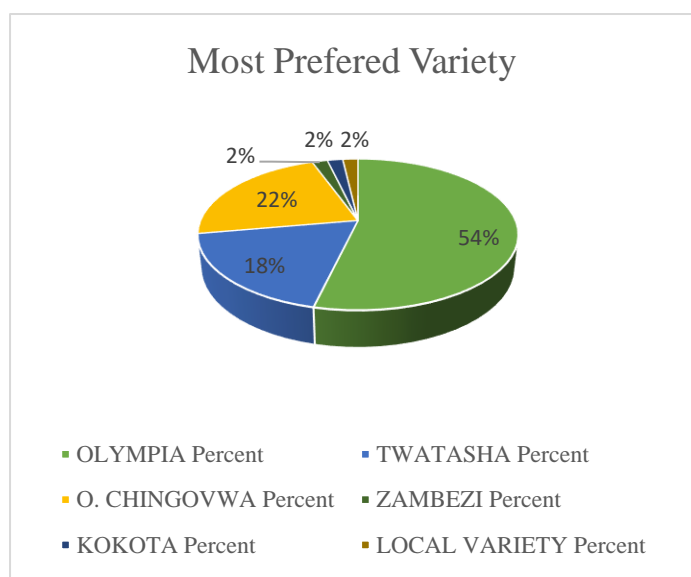


Figure 4.0; shows the most preferred variety of OFSP by the respondents, which is Olympia at 54%, Orange chingovwa at 22%, Twatasha at 18% with Kokota, Zambezi and the local variety all at 2% preference.

When asked why Olympia was the most preferred variety, the most prominent reasons were that it is high yielding with much bigger roots, does not easily rot and easily adapts with the local soil. Olympia, Twatasha, Orange Chingovwa, Zambezi and Kokota are Orange Fleshed Sweet potato varieties.

6.2 INCOME TRANSITION OF SOME FARMERS

In order to see if there was any form of income transition, respondents were asked to describe how their income position was before and after they adopted Vitamin A OFSP. Each picked a category from the tables below in which he/she felt belonged. And it turned out that majority of the respondents were in the poor category for those that did not have any form of income generating activity, such as a garden, Kantemba (makeshift store) to support their families daily basic needs.

Table 1.0 Percent distribution of Income status of respondents before adoption of OFSP

Good	<ul style="list-style-type: none"> - Has more than 1 IGA - Children access to Education - Access to food 3 meals and Clean drinking water 	7%
Fair	<ul style="list-style-type: none"> - Has at least 1 IGA - Children access to Education - Have Food at least 2 meals a day and Clean drinking water 	19%
Poor	<ul style="list-style-type: none"> - Not involved in any IGA - Children have Less or no access to Education (Primary) - Have Food 1 meals a day and no access to clean drinking water 	74%

Table 1.0 shows a description of respondents income status before the adoption of OFSP. The survey describes that majority of respondents fell in the poor category 74%, followed by fair at 19% and good 7%.

Table 2.0 Percent distribution of Income status of respondents after adoption of OFSP

Good	<ul style="list-style-type: none"> - Has more than 1 IGA - Children access to Education - Access to food 3 meals and Clean drinking water 	- 7%
Fair	<ul style="list-style-type: none"> - Has at least 1 IGA - Children access to Education - Have Food at least 2 meals a day and Clean drinking water 	- 22%
Poor	<ul style="list-style-type: none"> - Not involved in any IGA - Children have Less or no access to Education (Primary) - Have Food 1 meals a day and no access to clean drinking water 	- 71%

Table 2.0; shows a description of respondents income status after the adoption of OFSP. The survey shows a small increase in the fair category of 3% from 19% before to 22% after adoption of OFSP and on the other hand the majority are still in the poor category which stand at 71% posing a reduction of 3%, while good has remained static at 7%.

Note: these statistics are not from one season, but a progression of seasons since adoption. Starting from 2011/2012 to 2014/2015 farming/marketing seasons.

It is clear from the research finds that Orange Fleshed Sweet Potatoes have improved household income for poor farming community members. Families that had little or no income to show for, have over a few years of producing OFSP seen their incomes get to a whole new level.

Figure 5.0 percentage distribution of quantity harvested for sale 2014/2015 marketing season

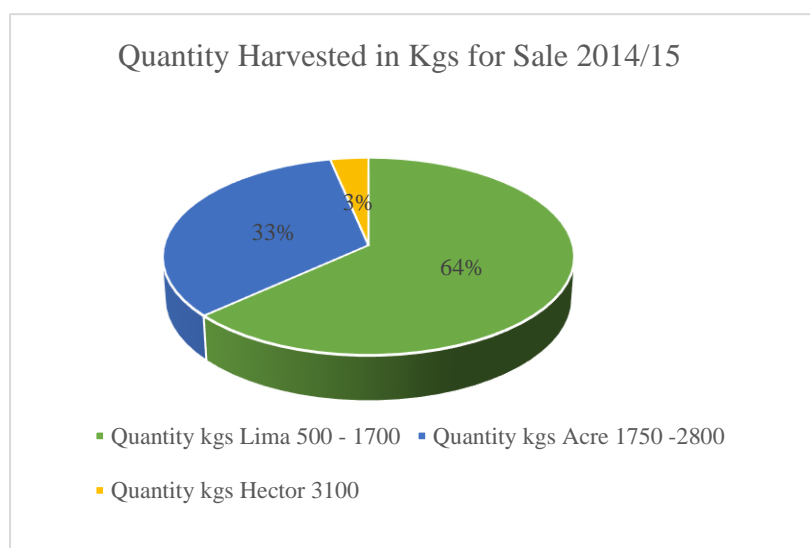


Figure 5.0 describes the quantities harvested by the respondents in the 2014/15 marketing season, it shows that 64% of the respondents cultivated a lima, 33% acre, while 3% was hector.

Figure 6.0 major costs incurred 2014/2015 farming/marketing season

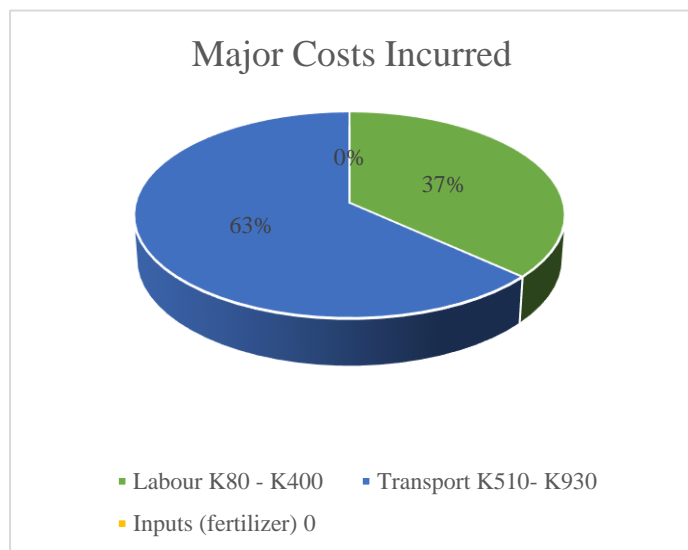


Figure 6.0 The describes the major costs that respondents incurred in the season under review 2014/2015 farming season, and the description is that the highest cost was transport 63%, Labour 37%, inputs had 0%.

The description of cost distribution in figure 6.0 shows that producing sweet potatoes require little or no the use of fertilizer, this makes it a cost effective crop to produce. It is a crop that any person can venture in to without worrying about capital for inputs. In as much a labour cost is involved, it is

however, not a must incur cost for every producer.

Figure 7.0 Market where OFSP was sold 2014/2015 marketing season

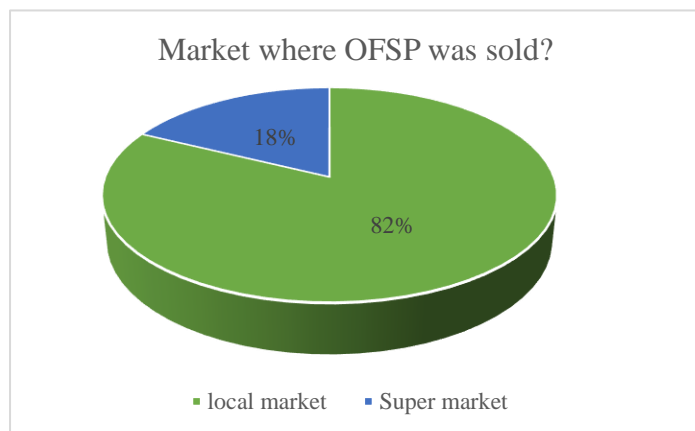
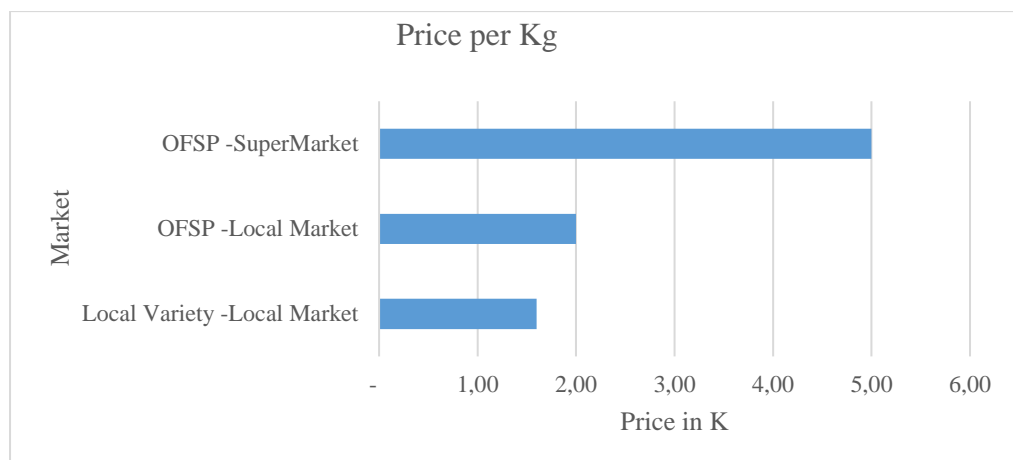


Figure 7.0 where the Orange Fleshed Ssweet Potato produced was sold, 82% of the OFSP sold was sold at local market (main markets, road side markets and community under 5 centers) within Kapiri Mposh or surrounding town, like Kabwe, Ndola and Lusaka’s Soweto Market. While only 18% was sold to the super market.

The respondents when asked why the majority did not sale there produce at the super markets, were a much better price was being offered? They mentioned that very few were linked to super markets, as communication was buyer to farmer through the implementing organization. While others said it was too expensive for them to transport sweet potatoes to Lusaka for sale as individual, due to lack of cooperatives to coordinate the bulking and transportation of sweet potatoes for sale on behalf of members.

Figure 8.0 below market price per Kg



According to respondents responses on table above, OFSP had a better market value as compared to the local variety. However, it also shows that prices varied depending on where they were being sold, either at a supermarket or local market (road side, designated main market area or community under 5 centers), the prices per Kg were between highest K5 and lowest K2, while the local variety the highest price was K1, 70n per kg at local market. The above prices translated that a standard 50 Kg bag of OFSP at super Market sold at K250 per 50kg bag and at local market K100 per 50kg bag, while the common local varieties sold K85 per 50kg bag.

Table 3.0 Profitability analysis table

	Product A (OFSP) S-MRKET	Product A (OFSP) L-MRKET	Product B (L-VARIETY) L-MRKET
Quantity harvested per lima kgs multiply by	1700	1700	1700
Price per Kg	K5	K2	1,70n
= Total Revenue	K8, 500	K3400	K2, 890
Less Total Cost	K1, 330	1330	K1, 330
Estimated Net Income	K7, 170	K2, 070	K1, 560

The table above compares the profitability of 2 types of sweet potatoes, based on the information that was provided by respondent (quantity harvested, market sold to, costs incurred and price) with Product A being Orange Fleshed Sweet Potatoes and Product B Local Variety of Sweet potato. The table has Super market and local market OFSP prices and Local Variety Local Market price. None of the respondents had sold his/her local variety to a super market. Hence, not price was given to that effect.

Table 4.0 Revenue expenditure table

ITEM	DISCRIPTION	%
Agriculture Equipment and input	<ul style="list-style-type: none"> - Water pump for irrigation - Livestock (goats and chickens) - Fertilizer and garden seeds 	- 2%
School Requirements	<ul style="list-style-type: none"> - School fees - Uniforms and books - Shoes 	- 26%
Household Equipment	<ul style="list-style-type: none"> - Television sets - Radio - Chairs 	- 9%
Building Materials	<ul style="list-style-type: none"> - Roofing Sheets 	- 5%
Food and Clothing	<ul style="list-style-type: none"> - Assorted 	- 58%

The above responses show that OFSP has the potential to improve income level at household. Though the impact is very minimal, with adequate support there can be improved and much appreciated impact on the lives of small scale farming households.

6.3 AWARENESS LEVELS OF OFSP AS AN INCOME GENERATING ACTIVITY

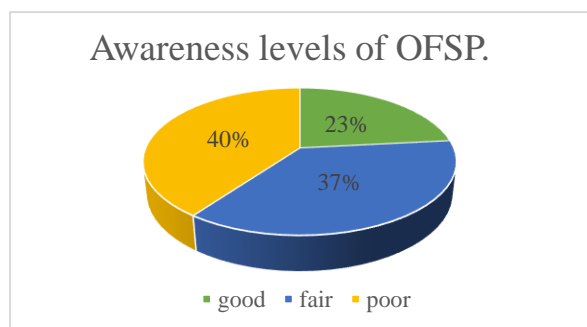


Figure 9.0; this pie chart describes the awareness levels of using OFSP as an Income Generating product other than nutritional purposes, with the following responses 40% believe the levels are poor, 37% feels it's fair and 23% said awareness levels are good.

When asked to clarify their responses. Some of the respondents mentioned that they felt more needed to be done in terms of awareness creation. The main information was on nutritional aspect of the potato, they were being encouraged to produce to combat vitamin A deficiency. Thus the majority were of the view that awareness messages should mainly be targeted at consumer education to change behavior towards sweet potatoes. In addition increase the number of traders to be trained in strategic markets and farmers about the nutritional benefits of vitamin A orange fleshed sweet potato. They believe once the traders and consumers are equipped with the product knowledge, it will play a greater part in creating a sustainable market for the product.

Respondents also acknowledged the efforts by International Potato Center (CIP) in implemented programs to create awareness for OFSP as a viable income generating product for the farmer. International Potato Centre According to respondents supported roadside sellers with signs and decorated marketing stalls and also Provided nutritional knowledge with particular reference to Vitamin A Deficiency (VAD), child care and dietary diversification, especially to women in the beneficiary households. Development of promotional and educational messages and their dissemination to the public through Nyanja and Bemba radio programs, dance, poetry, songs, field days and banners to create and sustain market demand for OFSP vines, roots, leaves and processed products made from OFSP. The information that was also verified on the organisations wed site. Source: Sweetpotatoknowledge.org

7.0 DISCUSSION AND IMPLICATION OF FINDINGS

The skewed distribution of respondents in Kaunga and Kambosha camps 67% (20) females and 33% (10) males) indicates the relative interest of females to males in sweet potatoes production. Factors influencing the adoption of OFSP were identified by respondents as profitability, yield and short maturity period with propositions of 44% (14), 32% (9) and 24% (7) respectively. Profit, maturity and yield were also attributed to as reasons for adoption in a study that was conducted in Nigeria (Soniia 2015).

The study also revealed that OFSP has the capacity to improve the income status of household. Data in tables 1.0 and 2.0 indicated that before adoption of OFSP majority of the respondents before adoption had poor income levels at 74%, and for those considered to have fair and good income levels were 19% and 7% respectively. While, after adoption 3% of those in poor category saw their income levels improve and moved in to the fair level, thus, poor reduced from 74% to 71% then the fair category moved from 19% to 22%, however, the good category remained at 7%. 3% growth may be small, but this is a great indication of the potential OFSP has to improve income levels of the poor rural farming households.

Using data form 2014/2015 marketing season shown on figures 5 (quantity harvested), figure 6 (cost incurred), figure 7 (market sold to) and figure 8 (highest market price), a comparison was made in table 3 to establish the profitability of OFSP against the local varieties. The results in table 3 showed that OFSP was by far a profitable than the local varieties. On the prices of OFSP they varied depending with where one sold their produce; the super markets in Lusaka offered a much higher price as compared to local markets. Further, the study also showed that OFSP income was impacting households in a positively. The statistics for expenditure in table 4, shows that 58% of respondents spent their income on food and clothing, 26% on school requirements, 9% household equipment, 5% on building materials and 2% on agriculture equipment.

The study also highlighted the need for more effort from various stakeholders to be put in towards awareness creation for the product. Majority of the respondents (40%) felt the awareness was poor,

while 37% and 23% considered it to be fair and good respectively. The respondents did also acknowledge the efforts by the implementing organisation; International Potato centre CIP towards awareness creation for a sustainable OFSP market both in Kapiri Mposhi District and the surrounding towns.

8.0 CONCLUSION

Poverty is a major problem that is affecting a lot of poor rural farming households in sub-sahara Africa and Zambia is not an exception to this problem. However, the data from the research revealed that OFSP is a very viable product that can be used as an income generation crop among rural poor farming households. The data show that OFSP has played a commendable part in income generation at community and household level. OFSP offered attractive prices especially for those that sold at super markets. The income from OFSP was used by respondents to buy food and clothing, pay for school requirements, building material and agriculture equipment, such as water pumps. The researcher believes going forward OFSP is the future in terms of uplifting income levels for poor rural households. However, this will require concerted effort by stakeholders to improve on the supply chain management and bring in more players to enhance coordination at all levels. OFSP has proved that besides being a healthy food with concerted efforts from stakeholders, it can also impact positively on rural household income.

9.0 RECOMMENDATIONS

The respondents recommended that the responsible Ministry responsible of agriculture should help in market linkages, creation of cooperatives to coordinate bulking and transportation to markets and act as links between farmers and trader and other stakeholders. More stakeholders should come on board such as bakeries, irrigation loan facilities health institutions to help promote OFSP and step up awareness of OFSP nutritional benefit messages especially towards consumers to trigger behavior change among consumers.

10.0 ACKNOWLEDGEMENT

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