

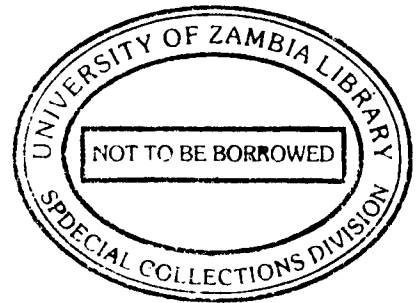
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FACTORS AFFECTING PAPRIKA PRODUCTION IN ZAMBIA: A CASE STUDY
OF SMALLHOLDER FARMERS IN KABWE DISTRICT

A thesis presented to the Department of Agricultural Economics and Extension Education
of the University of Zambia

By

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In partial fulfillment of the requirements for the degree of Bachelor of Agricultural
Sciences

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS	i
TABLE OF CONTENTS	ii
LIST OF TABLES	iv
LIST OF FIGURES	v
LIST OF ACRONYMS	vi
ABSTRACT	vii
CHAPTER 1: INTRODUCTION	1
1.1 Introduction and background	1
1.2 Problem Statement	2
1.3 Study objectives	3
1.3.1 Main Objective	3
1.1.1 Specific objectives	3
1.4 Hypotheses	3
1.5 Significance of Study	4
1.6 Organization of Thesis	5
CHAPTER 2: LITERATURE REVIEW	6
2.1 Introduction	6
2.2 Current Situation	6
2.3 Paprika as a new crop	7
2.4 Theoretical Framework	7
CHAPTER 3: METHODS AND PROCEDURES	9
3.1 Introduction	9
3.2 Area Background	9
3.3 Data Collection	10
3.4 Population and Sample Selection	10
3.5 Data Limitations	10
3.6 Data Analysis	11
CHAPTER 4: FINDINGS AND RESULTS	13
4.1 Introduction	13
4.2 Farmers Perception	13
4.3 Other Factors	15
4.4 Enterprise Budgets	17
CHAPTER 5: CONCLUSION AND RECOMMENDATIONS	21
5.1 Introduction	21
5.2 Conclusion	21
5.3 Recommendations	21
REFERENCES	22

APPENDICES -----	23
Appendix 1: Survey instrument -----	24

LIST OF TABLES

Table 1:	Factors Affecting Paprika Production -----	16
Table 2:	Enterprise Budget for Paprika per Lima -----	18
Table 3:	Estimated Enterprise Budget from IDE -----	19
Table 4:	Assets Bought as a Result of Increased Incomes -----	20

LIST OF FIGURES

<i>Figure 1:</i>	<i>Trends in Smallholder Income and Paprika Yields</i>	-----	14
Figure 2:	Constraints faced by Farmers in Paprika Production	-----	15

LIST OF ACRONYMS

IDE	International Development Enterprise
CGA	Central Growers Association
CLUSA	Co-operative League of the United States of America
GDP	Gross Domestic Product
PRSP	Poverty Reduction Strategy Paper
CSO	Central Statistics Office
SPSS	Statistical Package for Social Sciences
VIF	Variance Inflation Factor
ZMK	Zambian Kwacha
Kgs	Kilograms
ZNFU	Zambia National Farmers Union
FAO	Food and Agricultural Organization

ABSTRACT

FACTORS AFFECTING PAPRIKA PRODUCTION IN ZAMBIA: A CASE STUDY OF SMALLHOLDER FARMERS IN KABWE DISTRICT

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This study aimed at identifying factors affecting paprika production among small scale farmers. The study was conducted in Kabwe district among farmers under Central Growers Association (CGA) and International Development Enterprise (IDE) who have been growing paprika for the past five years.

Primary data was collected through a survey using a questionnaire and analyzed using SPSS. Secondary data was also collected from various sources to help in compiling the report.

The findings indicate that IDE and CGA farmers produce similar yields of paprika, therefore the programme under which the farmers belong to does not matter in this regard.

The results also show that the farmers who indicated that extension services are effective were under IDE. The reason why CGA farmers said that the extension services are not effective is that they don't have direct contact with the extension workers. The results show that paprika is profitable despite the problems faced by farmers such as low output prices and expensive input. It was indicated that the output price of paprika has an influence on the yield of paprika.

It is recommended that small-scale paprika farmers should be provided with loans, so that it could help them afford the inputs required to produce paprika. The market system should be improved further, in which the output price would be made favorable to both the farmers and the buyers to ensure that farmers are not discouraged from continuing production. There is need to invest in extension staff, input financing and the resources to finance them to build up on-farm skills and the trust necessary for the smooth functioning of these out-grower systems in order to build up viable small farmer out-grower networks.

CHAPTER 1

INTRODUCTION

1.1 Background

Paprika is a Hungarian word for sweet pepper. These sweet peppers of the genus capsicum have become popular worldwide as a spice and as a natural colorant in food, pharmaceutical, paint and cosmetics industries. Paprika has attracted the interest of Zambian farmers, agribusiness firms and policy makers because of its high value and its potential for generating significant export earnings, (IDE September 2003).

The world market for paprika is quite large and demand is currently estimated at 100 million kg and growing at 3 – 5% per annum (Export Board of Zambia, 1999). This has been so because there has been an increase in demand for oleoresin, a paprika extract used as a food colorant. Oleoresin demand has risen due to some European countries and the United States of America imposing bans on the use of artificial food colorant.

The production of paprika in Southern Africa is relatively new. It started in 1987 and has since been growing with the Republic of South Africa and Zimbabwe producing up-to a third of the world market. In Zambia, paprika has been under production by small-scale farmers and commercial farmers since 1995. Its production has mainly been promoted by private agribusiness companies like Cheetah, CLUSA, IDE and Bimzi.

The number of small-scale farmers producing the crop increased between 1995 and 2000 but began to decline thereafter. Between 2000/01 and 2002/03, production declined by more than 83% and fell short of the targeted levels by an average of 75%.

1.2 Problem Statement

Paprika is one of the high value crops that has been identified as having potential to raise small-scale farmers' incomes substantially and to reduce poverty. A comparative study between paprika and cotton, indicated higher profits for paprika when compared to those of cotton (Bwalya, 2002). The demand for paprika remains high while the supply is low despite the crop's potential. Many small scale farmers have not shown any improvement in their livelihood despite being introduced to paprika production (Manda and Haggblade, 2003).

Paprika in Zambia is mostly grown under out-grower schemes. Most of agricultural production activities done under out-grower schemes are successful because the out-grower managers see to it that the farmers receive the inputs on time and avails the necessary services. However in paprika production, as seen from the declining production trend, questions have arisen as to whether the out-grower scheme has achieved its intended purpose. The inability of small scale farmers to rise to the challenge to meet the demand points to problems in the paprika sub sector.

A few studies have been done looking at paprika production. These include: an evaluation of the potential opportunities for expanding smallholder incomes in paprika which indicated that paprika has potential for generating significant export earnings and increase smallholder incomes in paprika (Manda and Haggblade, 2003); an assessment of the profitability of paprika which indicated that paprika is profitable (Bwalya, 2002), therefore not much has previously been done to understand the problems farmers have undergone in producing paprika in Zambia.

1.3 Study Objectives

1.3.1 Main Objective

The main objective of this study is to determine factors that affect paprika production and their impact on small scale farmers.

1.3.2 Specific Objectives

1. To determine the effectiveness of the facilitating services in paprika production.
2. To determine the value attached to paprika production by small scale farmers.
3. To determine if the paprika market arrangements are favorable to small scale farmers.
4. To determine the profitability of paprika with regard to the resources invested in its production.

1.4 Hypothesis

This study will be guided by the following hypotheses;

1. The facilitating services provided to small-scale farmers are not effective.
2. The marketing arrangements are not favorable to small-scale farmers.
3. The value attached to paprika by small-scale farmers is minimal
4. The production of paprika is not profitable among small-scale farmers.

1.5 Significance of the Study

Paprika remains a highly profitable, relatively low-risk crop for smallholder farmers and commercial farmers alike. In comparison to the returns to land for maize, cotton, tobacco and export vegetables, paprika offers a highly attractive smallholder crop. Unlike vegetables, which are highly perishable, paprika, like cotton and tobacco, offers a non-perishable alternative, suitable for production even across a wider range of the more remote locations. It therefore, offers an alternative for a wider range of small-scale farmers.

However, the evaluation of factors causing low paprika production despite increased demand will provide important knowledge to out-grower scheme implementers and policy makers. Furthermore, by evaluating more profitable channels, this study will help

the small-scale farmers to substantially increase their incomes and consequently improve their livelihood.

1.6 Organization of Thesis

This thesis is made of five chapters. Chapter 1 presents the background on the production of paprika and its advantages, it also which includes the problem statement, study objective, hypotheses, significance of study and theoretical framework, followed by literature review (current situation and paprika as a new crop) in chapter 2 and the methods and procedures (area background, data collection, population and sample selection, data limitation and data analysis) (chapter 3). The findings and results are presented in chapter 4. The report ends with some concluding remarks and recommendations (chapter 5).

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter reviews relevant literature on the current situation, paprika as a new crop and profit motive in crop production. A review of literature on agriculture production activities with respect to economic and financial aspects show that most authors have carried out both qualitative and quantitative analysis.

2.2 Current Situation

According to the living conditions survey of 1998, it shows that in general, poverty levels have reached the most critical levels during the decade, 1990 – 2000 with the national poverty line rising from 69.2% in 1996 to 72.9% in 1998, while the percentage of those who are living in extreme poverty rising from 53.29% in 1996 to 57.9% in 1998.

Overall, poverty in rural areas was estimated at 83.1% as compared to urban areas where it was only 56% (living conditions in Zambia, 1998). Small scale farming households were in 1998 found to constitute the largest group in income poverty.

Eighty four percent of the small scale farming households are below the national poverty line and 72.1% of these are below the extreme poverty line. According to the Poverty Reduction Strategy Paper (PRSP 2001), agriculture sector was by 1998 estimated to support about 603,000 farming house – holds of which 75% were small scale farmers. This means that, if these small scale farmers were made well-off, through increased productivity, then the nation as a whole, would be better off due to an increase in Gross Domestic Product (GDP), employment and increased tax base. Also since these small scale farmers are the poor majority, poverty levels would drastically reduce. Thus, since 80% of rural population depend on agriculture for food and income (PRSP 2001), its

been suggested that small scale farmers should change their production patterns from subsistence to profit oriented production.

The PRSP paper further suggests that agriculture productivity is very low in Zambia as most farmers are engaged in subsistence farming. This means that finding cash crops with robust earning capacities would raise their incomes and thus remove them from poverty. This entails farmers switching from maize as the only crop for cash and food to incorporating other cash crops like paprika.

Maize has been experiencing decreasing returns per hectare, since 1997 (FAO 2000) and the major reason for this trend has been that prior to this period, maize had seemed to be doing fine due to heavy subsidies and very high investment in it by the government in its effort to attain self sufficiency in maize and ensure food security. The increase in maize performance from the 1980s, was only achieved at a high cost to the economy due to marketing and distribution subsidies.

A further analysis by Hichaambwa (1994), reveals that small scale farmers can only break even if they sell their maize at almost double the break even price for commercial farmers. However this removal of government on maize, small scale farmers have been making losses and thus found themselves without means of earning an income. The problem has been compounded by lack of organized markets for maize which has resulted into farmers being swindled by briefcase buyers. Instances have been recorded of farmers exchanging, say, a 90kg bag of maize with second hand clothes that cost very cheap in Lusaka. This leads to farmers incurring heavy losses and thus fail to recover costs of production and pay back the loans.

Also to prevent maize from going to waste due to lack of proper storage infrastructure, small scale farmers are forced to sell their commodities cheaply (the Zambia farmer, vol.3, No 11, 1999). So whether there is a bumper harvest or not, small scale farmers do not realize enough returns from maize. This has led the government to suggest cash crop with robust earnings and export markets as local markets have been small and thus

limiting to agriculture growth (PRSP 2001). These crops include; coffee, cotton, tobacco and paprika.

2.3 Paprika as a New Crop

Paprika as a new cash crop, is a crop which has gained potential as an export crop for countries like Zambia, due to some economic climatic and other changes in the traditional suppliers like Morocco and Spain. These changes have resulted in a shift in comparative advantage in terms of production favoring new producers like Zambia, (Zambia farmer vol.3 No.11, 1999). An example of these changes include, diseases build up due to cultivation of the same crop on the same piece of land in Morocco. In the case of Spain, the rising cost of production due to rise in wages for farm workers as a result of Spain joining European Union which imposes a minimum wage for farm workers. Zimbabwe, another major produce has reduced its supply due to political wrangles in the country which has resulted in many farmers losing land. This has left new entrants like Zambia which is disease free as well as having an abundant supply of cheap labor to have a comparative advantage in that they produce cheaply. The overall has resulted in net export earnings for paprika to rise sharply (Export Board of Zambia, 1999).

A study on the impact of paprika production on the incomes of small-scale farmers, a comparative study between cotton and paprika indicated higher profits for paprika when compared to cotton, (Bwalya, 2002). Another study on appraisal of potential income growth opportunities for smallholder in Zambia's paprika sub-sector indicated that paprika has potential to generate significant export earnings and increase smallholder incomes in paprika.

With paprika fetching very high prices per kg and with markets for paprika currently being estimated at 100million kgs annually and rising at 3-5% per annum, paprika should be the crop that small scale farmers may have been waiting for.

In conclusion, literature from the studies on paprika production has evidently shown that there are benefits accrued to producing it. Therefore, the question that remains unanswered is; can small-scale farmers benefit financially and economically by producing paprika.

2.4 Profit Motive in Crop Production

Paprika remains well suited to smallholder production. To make well informed production decisions, farmers need to be equipped with agronomic as well as financial and economical benefits involved in producing paprika. Since paprika production is relatively new in Zambia, not much research has been done on it.

According to Gittinger (1982), the major objective for farmers engaging in production is to maximize the amount that the farm family lives on. This is through increased food or income from crop sales which they use to buy items they need in their daily lives. We can theorize that the farmers main objective for engaging in production is to maximize their returns (profits) which they can use later to maximize the amounts that their families live on. Since net profit is the difference between gross revenue from sales and the cost of production (inputs) it can only be increased through either growing crops that have low costs of production or growing crops that fetch high prices or both. The out-grower scheme is an arrangement between farmers and marketing firms and/or credit and input providers under forward agreement, frequently at predetermined prices. The agreement also invariably involves the sponsor in providing a degree of inputs and provision of technical advice. The basis of such agreements is a commitment on the part of farmers' production and to purchase the commodity.

Therefore, farmers face a number of challenges. They have no market power, once paprika is produced, the prices are regulated for them. They do not make any decisions on accessing the market because all regulations are imposed on them. If farmers are given a chance to make their own decisions on production requirements, they will produce more with the available inputs and will increase their returns and thus show improvement

in their livelihoods. According to a study conducted by IDE (IDE Zambia, September 2003), it indicated that a high export crop, paprika generates on farm returns two to three times of maize. However paprika production is low and this study will analyze economically why this is so.

CHAPTER 3

METHODS AND PROCEDURES

3.1. Introduction

This chapter reviews the relevant methods and procedures that were used to collect and analyze data. The study was aimed at assessing factors that affect paprika production among small-scale farmers, therefore a cross sectional survey was conducted on those farmers who have been producing paprika under the out-grower scheme and information on secondary data was also collected from various organizations and from journal articles. Data which was collected using a questionnaire (see appendix), were coded and then entered on computer software, the statistical package for social sciences (SPSS). This was the main tool which was used to analyze data.

3.2 Area Background

The study was conducted in Kabwe district among small-scale farmers under Central growers Association (CGA) and International Development Enterprise (IDE) who have been growing paprika for the past five years. CGA is an association managed by farmers with senior management comprising of non farmers. The farmers form clubs comprising ten to twenty farmers and from these a contact farmer is selected. CGA provides extension services through the contact farmers. It looks for finances, buy inputs so that farmers buy from them. They also find market for the farmers. When paprika is harvested, farmers take it to their contact farmer where the extension workers from CGA come to collect from a depot. IDE is an out-grower scheme which facilitates paprika production on behalf of Cheetah Zambia limited. They provide extension services to the farmer.

3.3 Data Collection

This survey used both primary and secondary data. The survey was done in Kabwe area where IDE has been promoting paprika production.

For primary data, a cross sectional survey was conducted on those IDE farmers who have been producing paprika under the out-growers scheme. A structured questionnaire was used to collect the information from the farmers.

Secondary data included information on farmers-input packages and quantities of input, supplied to farmers. This was collected from IDE. The cost of production and farm budgets were collected from agribusiness companies that have been promoting paprika growing and these have also done estimates of farm budgets for the paprika enterprise. Further information was sourced from libraries and organizations on work done on the related subjects.

3.4 Population and Sample Selection

The model of sampling which was used is simple random sampling. The farmers register from IDE was used as a sampling frame. From these farmers, a random sample consisting of 45 farmers was drawn and then a questionnaire was administered for data collection.

3.5 Data Limitation

Some difficulties were encountered during the collection of data. The areas in which the farmers who grow paprika are located are very far from town area and are widely spaced, therefore it was not possible to capture all the selected farmers because of limited time and money.

3.6 Data Analysis

Descriptive statistics was used in data interpretation. The tools analyzed were frequencies which were employed to categorize the respondents' characteristics and responses concerning a certain variable. The pie and bar charts were used to depict frequency distribution in order to allow an immediate grasp of their characteristics based on visual representation. The data was then used to generate outputs using regression analysis. A multiple regression was used because there are more than two explanatory variables. Ordinary least squares was used to estimate the regression equation. Data was tested for any violations of the assumptions of classical linear regression model. Heteroscedasticity was tested for using Breusch Pagan test and multicollinearity was tested for using variance inflation factor (VIF).

This regression analysis was specified as;

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \alpha_1D_1 + \alpha_2D_2 + e_i$$

Where

Y = supply of paprika

X₁ = highest level of education of household head

X₂ = household size

X₃ = age of household head

X₄ = distance from point of collection

X₅ = distance from main road to homestead

X₆ = weighted price of paprika in k/kg

D₁ = sex dummy, equal to 1 if household head is male and 0 otherwise

D₂ = contract condition dummy, equal to 1, if quality, quantity to deliver or to plant and/or price are pre-established and 0 otherwise

D₃ = collection dummy, equal to 1 if out-grower scheme collects product from homestead

D₄ = CGA dummy, equal to 1 if farmer is under CGA

β_0 is the intercept while $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \alpha_1, \alpha_2, \alpha_3$ and α_4 are coefficients and e_i is the random error term which is normally distributed with mean zero and variance.

To find out whether or not a particular independent variable had an influence on the dependent variable the t-statistic was used. The decision rule that was used to test the significance of the particular estimates at 90% confidence level was that if the p-value of a certain independent variable was less than 0.1, then the estimate is significant. Conversely, if the p-value was greater than 0.1, then the estimate was insignificant

To determine the profitability of paprika, two enterprise budgets were used to help in the understanding of how these farmers benefit from paprika exercise. One budget was prepared using primary data for the 2004/2004 agricultural season and the other one was an estimation of enterprise budget prepared by IDE. The assumptions made were that 8% was interest on variable costs. This is the opportunity cost which could have been used in another alternative. Depreciation was 8% on both the machinery and the hand hoe.

CHAPTER 4

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents the results from both descriptive studies and regression analysis. Descriptive analysis consisted of results from the pie and bar charts which showed trends in smallholder income and paprika yields, constraints faced by farmers in paprika production and regression analysis consisted of estimated functions of factors affecting paprika production. It also includes the estimated budget from IDE and another budget from primary data.

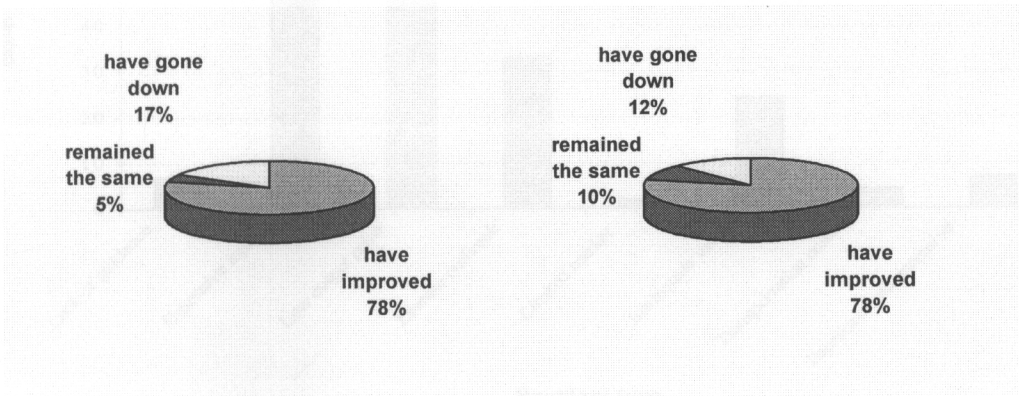
4.2 Farmers' Perceptions

From the study it was indicated that the extension services are being provided to all the farmers. Overall results indicate that the extension services are effective. This was reviewed by 73% of the respondents and the majority of these farmers were under IDE. Most of CGA farmers said that the extension services provided to them were not effective because they were provided only through one contact farmer. Thus they found these services to be ineffective due to the fact that there was no direct contact between the farmers and the extension workers and that there was no follow-up on these services. From the farmers who said that the services were effective, the majority indicated that from the time these services were introduced to them the incomes and yields of paprika were improved and so were the yields of paprika (Figure 1).

Figure 1: Trends in Smallholder Income and Paprika Yields, from Introduction of Extension Services to 2005

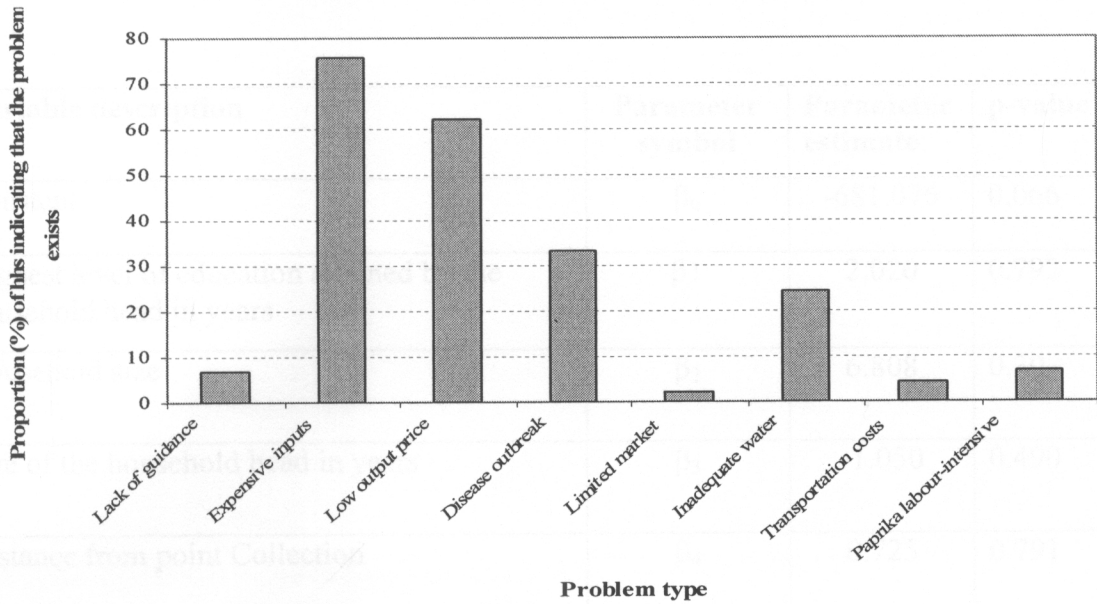
a) Yields

b) Income



However, there are problems being faced by farmers in paprika production and these were common to both the farmers under IDE and CGA. The most common problem faced by farmers was expensive inputs which was indicated by more than 70% of the farmers, seconded by low output prices which was indicated by more than 60% of the total farmers. Disease outbreak and inadequate water were indicated by more than 30% and 20% respectively. Other problems revealed but not included were limited market, lack of guidance, transport costs and paprika being labor intensive, (Figure 2).

Figure 2: Constraints faced by Farmers in Paprika Production



4.3 Other Factors

When all the factors that were believed to have an influence on paprika production were controlled for using regression analysis, the overall model was statistically significant at 10%. The variables in the model explained 62% of validity in yield. The following table shows the variables that are statistically significant and those that are not (as shown in the table below).

Table 1: Factors Affecting Paprika Production

Variable description	Parameter symbol	Parameter estimate	p-value
Constant	β_0	-681.076	0.066
Highest level of education attained by the household head in years	β_1	2.020	0.792
Household size	β_2	6.808	0.30
Age of the household head in years	β_3	-1.050	0.490
Distance from point Collection	β_4	0.725	0.791
Distance from homestead to main road	β_5	0.716	0.634
Weighted price of paprika in K/kg	β_6	0.137	0.081
Sex dummy, equal to 1 if household head is male	α_1	40.205	0.549
Contract dummy, equal 1 if quality standard, quantity to deliver and to plant and/or price is pre-established.	α_2	14.175	0.875)
Collection dummy, equal to 1 if out-grower scheme come to collect product	α_3	222.687	0.005
CGA dummy, equal to 1 farmer is under CGA	α_4	-18.122	0.792

Ordinary least squares regression results

Source: Own Survey Data

Employing the decision rule, only the parameter estimates of the weighted price of paprika and the parameter estimate of the collection dummy were significant. This means that an increase in the output price of paprika would lead to an increase in quantity

supplied by 0.137kgs, hence an increase in the yields of paprika. When the out-grower scheme collect the product from each household, it means that the farmers will not have to incur any transport costs thus they will concentrate on their products and therefore will manage them well, thus the yield of paprika will increase by 222.687kgs, and this is true according to theory.

All the variables had the correct signs except for distance from homestead to the main road and distance from point of collection. This was contrary to theory in that a decrease in distance would lead to an increase in the yields because farmers would be encouraged to concentrate on managing their fields.

4.4 Enterprise Budgets for Paprika

To determine the profitability of paprika, enterprise budgets were prepared. One was prepared using primary data collected through the interview and the other one was prepared using the estimated values from IDE.

The following assumptions were made:

1. That a farmer grows paprika on 1 lima
2. That interest on variable costs at 8% (opportunity cost)
3. That depreciation on hand hoe and plough at 8%

From the above, two enterprise budgets were prepared to show the variations sales, costs and profitability between the two budgets (See Tables 2 and 3 below).

Table 2: Enterprise Budget for Paprika per Lima 2004/2005 Season

	Units	Cost (ZMK)	Cost (ZMK)
REVENUE			
Yield:	120kg @K3500/kg		420000
VARIABLE COSTS			
Seed		20000	
Fertilizer		140000	
Chemicals		55000	
Packing	2-90kg bag @K2000	4000	
Labor: nursery, planting, harvest and handling:	2 people by 2 mandays	15000	
Total variable costs		234000	
Interest on variable costs @ 8%		18720	
Total variable costs			252720
Gross margin			167280
OWNERSHIP COSTS			
Hand hoe depreciation	8% of K120000	9600	
Land charges		30000	
Total fixed costs		39600	
Total costs			292320
Profit			127680

Source: Own Survey data

From a lima of paprika an average of 120Kg of paprika was realized and sold at K3500 per Kg and this gave a revenue of K420000. The variable costs plus the interest was K252720, the gross margin was K167280 and the profit was K127680 (Table 2). Thus, it is profitable.

On the other hand, an estimated enterprise budget from IDE with the assumption that everything goes as planned showed that from a lima one would get 200Kg of paprika and sell it at K6000 per Kg generating revenue of K1200000. The profit here was K651320 (Table 3). From the tables it can be readily seen that the actual price affected the profitability. In this case the price mechanism would need investigating.

Table 3: Estimated Enterprise Budget For Paprika Per Lima For 2004/2005 Season

	Units	Cost (ZMK)	Cost (ZMK)
REVENUE			
Yield:	200kg @ K6000/kg		1200000
VARIABLE COSTS			
Seed	0.25kg @ K250000/kg	62500	
Fertilizer: compound D	100kg @ K1050/kg	105000	
Urea		46250	
Chemicals: Karate	0.2litres @ K90000/l	18000	
Thiodan	0.8litres @ K37500/l	30000	
Copper oxychloride	1.5litres @ K14000/l	21000	
Dithane M45	1litre @ K27750/l	27750	
Drying		45000	
Transportation		12500	
Packing	2-90kg bag @K2000	8000	
Labor: nursery, planting, harvest and handling:	2 people by 2 mandays	25000	
Total variable costs		401000	
Interest on variable costs @ 8%		32080	
Total variable costs			433080
Gross margin			766920
OWNERSHIP COSTS			
Plough depreciation	8% of K820000	65600	
Land charges		50000	
Total fixed costs		115600	
Total costs			548680
Profit			651320

Source : International Development Enterprise

From both the enterprise budgets, it is shown that paprika production is profitable to small-scale farmers. Therefore it has translated into people producing it buying various assets, (Table 4).

Table 4: Assets Bought as a Result of Increased Incomes from Paprika Production

Assets	Proportion (%) of households that bought assets		
	Not bought	Bought with paprika money	Bought with non paprika money
Farm implement	53.3	44.4	2.2
House	100	0	0
Cattle	84.4	15.6	0
Television/radio	95.6	4.4	0
Bicycle	79.6	20.4	0
other	93.3	6.7	0

Source : Own Survey data

The Table above shows that some farmers are able to buy some implements using the money generated from paprika production. This supports the fact that paprika is profitable.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section brings out the main conclusion and recommendations of the study. These were based on the findings and results of the study of factors that affect the production of paprika. The recommendations were made on how some of the problems could be solved.

5.2 Conclusion

The study found that IDE and CGA farmers produce the same yields of paprika. Therefore the programme under which the farmers belong to does not matter in that it does not play a significant role in determining yield of paprika.

The facilitatory services, that is, extension services are provided to the farmers but not all of them find them effective, especially the farmers under CGA. Most of the farmers who said that the services are effective, indicated that from the time these services were introduced to them, their incomes and yields have improved. Most farmers were able to buy assets from the increased incomes.

The results also show that paprika is profitable despite the problems faced by farmers such as low output prices and expensive inputs. The output price of paprika and the point of collection have an influence on the yield of paprika.

5.3 Recommendations

Upon finding that paprika has a lot of advantages as a cash crop to both the farmers and the nation, the following have been recommended as ways of increasing paprika

production among smallholder farmers hence raise their incomes as well as improving Zambia's export earnings.

Small-scale paprika farmers should be provided with loans, so that it could help them afford the inputs required to produce paprika. The market system should be improved further, in which the output price would be made favorable to both the farmers and the buyers to ensure that farmers are not discouraged from continuing production.

There is need to invest in extension staff, input financing and the resources to finance them to build up on-farm skills and the trust necessary for the smooth functioning of these out-grower systems in order to build up viable small farmer out-grower networks. Finally, a more comprehensive study should be conducted.

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APPENDICES

Appendix 1 Questionnaire

FACTORS AFFECTING PAPRIKA PRODUCTION IN ZAMBIA AMONG SMALL- SCALE FARMERS, A CASE STUDY OF KABWE DISTRICT

Dear Respondent,

You have been randomly selected to help with information on your production of paprika and other information. This information is required as part of an academic research exercise and will by no means be used against you. Your co-operation will be highly appreciated.

1. House Hold Identification

- 1.1 Constituency code Constituency name:.....
- 1.2 Ward code Ward name:.....
- 1.3 CSA code
- 1.4 SEA code
- 1.5 Village name:..... Chiefdom:.....
- 1.6 Household code Name of household head
.....
- 1.7 a) Year household head was born
- b) Sex of household head sex

2. Demographics

2.1 I now would like to ask you a few questions about each of the members of your household/farm, family including the farm manager.

Can you please give me the names of the members of the household?		What is 's sex? 0= Female 1= Male	When was he/she born		What is her/his marital status 1 = Single 2 = Married 3= Divorced/separated 4 = Widowed	What is the highest level of education attained by.....	What is the relationship to the head
Member code	Member name		Month	Year			

Month born codes:

- 1 = January
- 2 = February
- 3 = March
- 4 = April
- 5 = May
- 6 = June
- 7 = July
- 8 = August
- 9 = September
- 10 = October
- 11 = November
- 12 = December

Level of education codes:Relation to head codes:

- 0 = none
- 1 = sub A; Grade 1
- 1 = Sub B; Grade 1
- 2 = Std 1; Grade 2
- 3 = Std 2; Grade 3
- 4 = Std 3; Grade 4
- 5 = Std 4; Grade 5
- 6 = Std 5; Grade 6
- 7 = Std 6; Grade 7
- 8 = Form 1;Grade 8
- 9 = Form 2;Grade 9
- 10 = Form3;Grade10
- 11 = Form 4;Grade 11
- 12 = Form 5;Grade 12

- 1 = head
- 2 = Spouse
- 3 = Own child
- 4 = Step Child
- 5 = Parent
- 6 = Brother/Sister
- 7 = Nephew/Niece
- 8 = Son/daughter in law
- 9 = Grandchild
- 10 = Unrelated
- 11 = Other (specify)

3. Nature of the farm

3.1 a) How far is the farm from point of collection? km

3.2 How far is the main road from your homestead? Km

3.3 How many months in a year is the nearest main road accessible months

3.4 What is the main economic activity for this farm?

- 1 = Cash crops
- 2 = Grains
- 3 = Fruits/Vegetables
- 4 = Other: specify

3.5 How many labourers did the farm have during the past 12 months

Sex of workers	Number of workers hired during peak season of the past year	
Male	<input type="text"/>	<input type="text"/>
Female	<input type="text"/>	<input type="text"/>

3.6 Who manages the farm?

- 1 = Farmer/Owner
- 2 = Owner's spouse
- 3 = owner's child
- 4 = Farm manager
- 5 = other: specify

3.8 What is the Sex of the one who manages this farm?

- 0 = Female
- 1 = Male

4. Effectiviness Of Facilitatory Services

4.1 Do you have any paprika extension services provided to you? 1=Yes 2=No

4.2 If yes, what extension services are provided?

4.3 From the time these services were introduced to you, how have the:-

a) Incomes of paprika been?

b) Yields of paprika been?

1 = have improved 2 = remained the same
3 = have gone down 4 = other: specify

4.4 Do you think these extension services have been effective?

1 = Yes
2 = No

Reason:.....

4.5 Do you think paprika is a good crop to grow?

1 = Yes
2 = No

Reason;.....

4.6 Are there any problems you are facing as farmers in paprika production?

1 = Yes
2 = No

4.7 If yes, list the problems

.....
.....
.....
.....

5. Profitability

Activity	Input or cost items	Unit	Quantity	# of application	Price (ZMK)

Activity codes

Input or cost item codes

Input unit codes

- 1 = Land preparation
- 2 = Nursery management
- 3 = Planting
- 4 = Weeding
- 5 = Chemical application
- 6 = Fertilizer application
- 7 = Input collection
- 8 = Harvesting
- 9 = spraying
- 10 = Packaging
- 11 = Other: specify

- 1 = labour
- 2 = seeds
- 3 = seedlings
- 4 = chemicals
- 5 = chemicals
- 6 = Manure
- 7 = Equipment & transport hire
- 8 = Packaging materials
- 9 = Other specify

- 1 = man days
- 2 = Kg
- 3 = Litre
- 4 = Number
- 5 = Lump sum
- 6 = Other specify

Paprika field	Quantity	Unit	Quantity harvested			Amount earned
			A	B	C	

6.1 What was the yield of paprika in 2004/2005 seasons? Kg

6.2 At how much did you sale paprika per kg last season? Zmk

6.3 Were you paid cash for your paprika?

1 = Yes

2 = No

6.4 Are the following pre-established with the buyer in the contract?

1 = Yes

2 = No

a) Quantities to plant

b) Quantities to deliver

c) Quality standards (are quality parameters made explicit)

d) Price

e) Some other responsibility or service

6.5 Does the out-grower scheme come to collect the product?

1 = yes

2 = No

6.6 Have you bought any of the following items in the last few years?

1 = Yes

2 = No

a) Farm implement

b) House

c) Bicycle

- d) Cattle
- e) Television/Radio
- f) Other: specify

6.7 What is the value of the item above?

6.8 What items in question 6.5 was solely bought using money from paprika?

6.9 Comparing now and 5 years ago, how have this farm's paprika yields changed?

- 1 = Improved a lot
- 2 = Improved a little
- 3 = Remained the same
- 4 = Worsened

7.0 Comparing now and 5 years ago, how has the quality of your paprika changed?

- 1 = Improved a lot
- 2 = Improved a little
- 3 = Remained the same
- 4 = Worsened

