

Chipulukusu Vegetable Growers

FStT BUSINESS PLAN - 2009-2012



EXECUTIVE SUMMARY

The Chipulukusu Vegetable Growers (CVG) project is aimed at producing graded and packed tomatoes of the Tengeru variety for supply to Ndola bulk buyers. CVG is a registered cooperative which has 100 paid up members who will constitute the urban producers for the MoPO. The project will supply tomatoes throughout the year from December 2009. CVG is organised in committees dealing with the whole production, supply and marketing chain. The committees are made up of representatives of clusters. The Ministry of Agriculture and Cooperatives will provide extension services for the farmers whereas other partners will provide technical advice, and later financing and credit. Individual farmers will sort and grade tomatoes at the farm plot before transfer to a central location for final sorting, grading and packing by CVG. Transportation of the product to clients will be handled by CVG. CVG will also carry out all functions related to marketing contracts and debt management with various clients on behalf of its members. Members of CVG will enter into individual contracts with CVG related to the production and marketing of tomatoes as well as to loan and other financial aspects.

The initial investment per farmer is estimated to be K17,581,221 broken down into variable costs in terms of consumables and farmer management costs of K5,315,575 and K12,265,646 respectively. The working capital per farmer will be K1,000,000. Therefore, the total production cost per kilogram of tomato is estimated to be K1,159. The variable cost is projected to be K265.45 per kilogram of tomato.

The profitability assumption is based on the total annual production of 20,000 Kg of tomatoes. This is the volume of the product that will be supplied to the market after deducting 25% for losses. The break even quantity is 7,055 Kg translating into 282 boxes of tomatoes per farmer per year. The basic minimum average transfer price, from each farmer to CVG, to achieve profitability is K2,000 per Kg of tomatoes. The project is expected to provide an annual profit in the first year of K11,180,268 per farmer with a return on investment (ROI) of 103%. The average net profit margin over the projected 5 year period, based on the transfer price of K2,000/kg, is estimated at 48%. The price of K2,000/Kg of tomato is the price at which the farmer will supply the cooperative. CVG will therefore sell tomatoes at a basic minimum of K2,500/Kg – the maximum price will depend on the market.

A worst case scenario is when farmers produce less than the break-even point (i.e. 7,055Kg per annum) which will yield a loss of K5.9 million. A best case scenario is when the target production level of 20,000 Kg is achieved. The worst and best case scenarios are developed taking into account loans/credit, salaries, a very low sales price of K2,000/Kg and other personal costs for the farmer over a period of a year. The project is expected to have more than 100 seasonally employed individuals in a production cycle.

Chipulukusu Vegetable Growers will achieve good results once each farmer produces 20,000 Kg over a period of a year and tomatoes are sold at a basic minimum of K2,000 per kilogram. Secondly, sustainable production of good quality tomatoes that are supplied timely to clients will ensure that CVG has a backbone of clients for its products and farmers retain a profit over their investment.

ABBREVIATIONS AND ACRONYMS

ADCOM	Administrative Committee
CVG	Chipulukusu Vegetable Growers
ECZ	Environmental Council Zambia
IDE	
Kg	Kilogram
MACO	Ministry of Agriculture and Cooperatives
MoPO	Most Promising Option
PACRO	Patents and Companies Registration Office
UPFS	Urban Producers Field School
ROI	Return On Investment
USAID MATEP	
ZAFFICO	Zambia Forestry and Forest Industries Corperation
ZRA	Zambia Revenue Authority

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BUSINESS IDEA

The Most Promising Option for the Chipulukusu Vegetable Growers is the '**Production and marketing of graded and packaged tomato**' for bulk sell to supermarkets, hospitals, industries, colleges and schools.

Tomato has been grown in Chipulukusu before and continues to be grown now. Urban producers wait for buyers who are mostly middlemen to come and buy from their gardens. The buyers pick the tomato from the garden themselves and the producer only quantified and gave it a price.

The innovation is therefore outlined as

1. **Grading:** urban producers will grade the Tomato according to the market requirements. If the buyer wants semi-ripe tomato of medium size, the urban producer will have to select tomato to match the specified quality. It must also be noted here that the variety of Tomato (TENGERU) that has been chosen meets market requirements.
2. **Packaging:** currently the buyers use their own packaging crates and the urban producers have only the measuring crate when selling. This will change as the group will sell 1 Kg packs and custom labelled crates of 25kg capacity.
3. **Marketing:** urban producers will be involved in market research in order to produce products that conform to market requirements as opposed to the current scenario where one grows a crop without actually knowing who will require the product.
4. **Production methods:** whilst production of Tomato has been going on, most producers have not been trained on the best practices in Tomato production. For the production of this particular Tomato, training will be very important to ensure best production practices are used.

PROJECT DESCRIPTION

The project is concerned with the production of high quality graded and packed tomatoes of two grades: semi-ripe and ripe. It will supply the tomatoes in two forms, in bulk consisting of 25Kg boxes and 1 Kg packets. The 25 Kg boxes will be supplied to institutions and other bulk buyers whereas the 1 Kg packets will be supplied to markets and homesteads. The project will have 100 farmers each with two 25m x 25m plots for the growing of tomatoes which will be used in sequence. Farmers will produce tomatoes which will be cleaned and pre-processed at the producer level. All production and pre-processing functions will be carried out by the farmer. Each farmer will select quality tomatoes which will be delivered to a central point to CVG officials who will weigh and grade the tomatoes. Each farmer's supply will be recorded before being delivered to CVG's clients.

CVG will procure limited inputs to lend to farmers. The cost of such inputs will constitute a form of credit which farmers will pay back after tomatoes have been sold. Additionally, the cost of centralized grading, packing, transport and sale will also be passed onto the farmer. The money collected from the farmers will be ploughed back into the input supply chain as well as the marketing of tomatoes.

OPERATIONAL PLAN

The seasonal calendar for the production and market of graded and packaged tomato for the Chipulukusu Vegetable Growers appears Table 1.

Table 1. Seasonal calendar for the tomato production in Chipulukusu

Activity	2009						2010					
	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1.Land prep/seed purchasing	xx						xx					
2.Nursery preparation	xx						xx					
3.Transplanting		xx						xx				
4. Fertilizer Application			xx	xx xx					xx	xx xx		
5. Aeration, weeding, pruning			xx	xx	Xx				xx	xx	xx	
6.Spraying		xx	xx	xx xx				xx	xx	xx xx		
7. Fertilizer application					Xx	xx					xx	xx
8. Stacking				xx xx						xx		
9.Harvesting						xx	xx	xx	xx	xx	xx	xx

Production

(1) Variety

The chosen variety of tomato that will be grown is Tengeru as it fits well with the market requirements.

(2) Source of seed, chemical and fertilizers

- The Tengeru variety is found in Rehma, Mineland and Hailenge agro-product shops.
- The agrochemicals are found at Mineland and Rehma.
- The fertilizers is sold from the Omnia outlet and Mineland.

(3) Equipment requirement

The following tools (Table 2) will be required by each of the hundred urban producers to successfully grow Tomato as the Most Promising Option.

Table 2. Tomato production equipment for individual producers

Item	Quantity
Watering can	4
Garden folk	1
Rake	1
Hoe	3
Slasher	1
Sickle	1
Shovel	1
Sprayer	1
Gum boots	1
Nose & mouth mask	1
Gloves	1
Cover all	1
Wire strand	1900m (with 25m allowance)

(4) Irrigation water

The 100 urban producers in Chipulukusu are endowed with an all year round flowing stream besides the area being in a dambo area with underground water lying about a meter into the ground.

(5) Production cycle

It is hoped that production of the Tomato shall be all year round and therefore the production will have two production cycles in order to have no interruption in the all year supply of Tomato. Each of the hundred urban producers will be required to have two portions of $\frac{1}{4}$ Lima (25m x25m) reserved for Tomato production. One plot will be cultivated in the first cycle and the other plot prepared in the second cycle half way during the production from the first cycle.

As reflected in the seasonal calendar in the first year of production which is 2009, the establishment of nurseries will be done in the fourth week of July. By the

fourth week of August seedlings will be ready for transplanting. Tomato harvesting will start by December.

(6) Production Methods

All the urban producers in CVG will be trained in the best practices of Tomato production. The Urban Producer Field School (UPFS) will be employed to carry out the training which will be held at every stage of production in order to meet all quality criteria and quantity as required by the market.

(7) Post Harvest Activities

Every producer will pick, wash and provisionally grade tomatoes. A centralized CVG grading and packaging team will verify the grading and pack the tomatoes as required by the buyers. An Urban Producer Field School will be held to train the producers on the best post-harvest practices.

(8) Coordination

In order to have consistence in the quality and quantity produced, a committee will be established to monitor the performance of the crop throughout the production cycle. Another committee will be created to facilitate training at every stage of the production cycle.

Processing

Tomato will not be processed into another product. However, Tomato will be sorted out into different grades amongst which will be the two ripeness standards – semi-ripe and ripe.

Equipment required

All the urban producers will need the processing equipment in Table 3.

Table 3. processing equipment for individual producers and CVG

Item	Quantity
Basins	2
Buckets	1
Labelled crates	10
Measuring Scales	10 (for CVG, centralized use)

The urban producers will have to acquire a piece of land close to the gardens where a storage shade will be constructed. The storage shade will have to source of clean water nearby for washing of the tomato before it packaged.

Transformation process and required practices

The transformation process for the production and marketing of graded and packaged tomato will be as follows below

Coordination

A committee will be created to be in-charge of quality control in-order to meet quality criteria by buyer.

Marketing

(1) Promotion

A product brochure on the MoPO will be produced and distributed to potential buyers. Radio Ichengelo will also be used to promote the MoPO.

(2) Taking orders

Tomato purchase agreements/contracts will be signed with interested buyers and these contracts will detail requirements and delivery conditions for the various institutions.

(3) Transport

A truck will be hired for distribution to those institutional buyers who will not collect from the producers' storage shade.

(4) Coordination

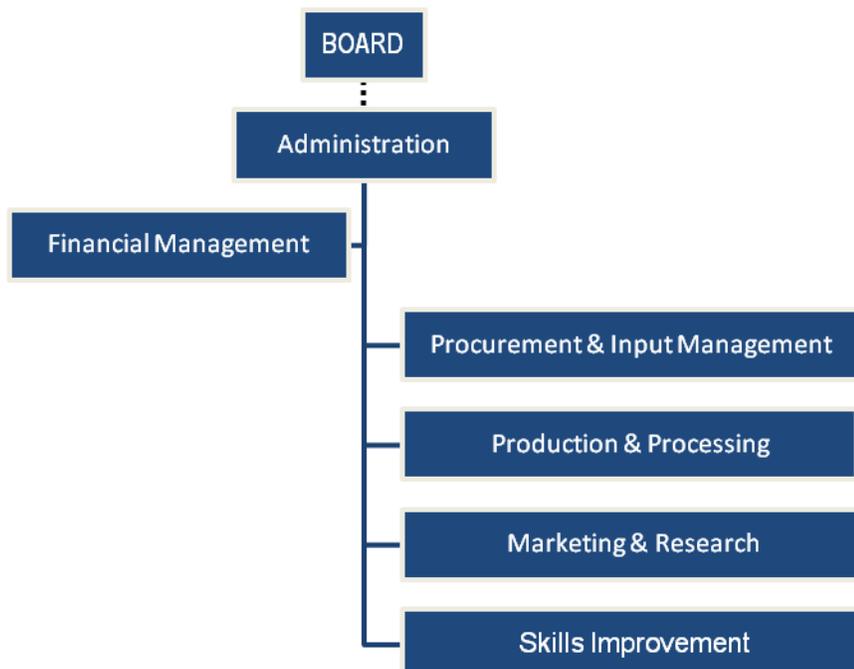
The vice chairperson of the Administration Committee (ADCOM) will be responsible for communication and organizing transport whenever it will be required. A marketing committee will be created to ensure the producers always have a steady market for their produce. The tomato handling chain from the garden to the consumer is shown below.



CLIENT

STAFFING STRUCTURE

The functions of CVG will be administration, procurement and management of inputs, financial management, record keeping, production and processing, transportation, marketing and skills improvement. The persons tasked with these functions will not be paid employees of CVG for the first 3 years (2009-2012). This position will be reviewed once sufficient funds have been accumulated and CVG is operating profitably to afford the pay for employees. The first position to be filled is that of the person to manage the CVG accounts. Management structures for individual farmers are not included in this business plan.



All positions before 2013 will be occupied by volunteers including the persons to manage the grading and packing of the tomatoes.

The Administration function will be headed by a *Chairperson, Vice Chairperson (Communication), and Secretary (minute taking & record keeping)*. The Board will be composed of *Ex-officios (agriculture extension), all heads of CVG committees, and 2 trustees*. Each of the functions will be responsible for the following

- **Administration:** coordination, transport, communication, record keeping and supervision of all other functions
- **Financial Management:** sourcing of financing and credit, management of the organization's finances including debt management
- **Procurement & management of inputs:** purchase of inputs, transportation, distribution and storage; care & maintenance
- **Production & processing:** assessment of group production, grading, packaging of tomatoes
- **Marketing & Research:** finding markets for tomatoes, transportation of products to clients, advertising
- **Skills Improvement:** technical improvement of production and processing. Liaison with extension officers through the communication person.

CVG Committees

1. Administrative Committee, ADCOM, will be headed by the Chairperson with a Vice Chairperson
2. Finance Committee: Treasurer, Assistant Treasurer and 2 Trustees. To be headed by an accountant once CVG is financially viable. Trustees will be selected from the farmers not occupying any other committee position.
3. Procurement Committee: Buyer and Assistant Buyer.
4. Marketing and Research Committee: Salesman and Assistant Salesman.
5. Production and Processing Committee: 4 committee members selected from each of the 4 clusters. The four will choose a Production Coordinator as head.
6. Training Committee: 4 committee members selected from each of the 4 clusters. The four will choose a Farmer Promoter as head.

Financial Management

The treasurer will manage the finances of CVG. In order to issue a check, two signatory panels will be created in which the Treasurers will be in Panel A and the 2 trustees will be in Panel B. Only one person from Panel A (one of the treasurers) and one from Panel B (one of the trustees) will be authorized to sign on a single check for it to be issued.

The Chairperson will sign a voucher together with the treasurer which will authorize the issuance of the check. No check will be signed before the voucher is issued by the Chairperson.

CVG Records

CVG will maintain the following records: production, processing, storage, sales, financial, committee reports, annual reports and all records of ADCOM meetings.

PRODUCT STRATEGY

CVG will offer high quality and well packaged tomatoes required for consumption in Ndola and Kitwe. Ndola consumers of tomatoes in bulk or small quantities require high grade semi-ripe and fully ripe tomatoes supplied on schedule which CVG will be able to supply throughout the year.

Market Analysis

Clients for CVG tomato

Institutions identified were Ndola Central Hospital, Arthur Davison Hospital, Quicksave, Fisenge, Pantry Pride, New Ambassador, Farmers Paradise, Freshmark and Freshpikt.

Minimum Quality

Farmers Paradise, Pantry Pride, New Ambassador Hotel, Fisenge and Freshmark required semi-ripe tomatoes and medium to large size. In addition, it has to be long shelf life.

Ndola Central Hospital required ripe tomatoes without a specific size.

Freshpikt required ripe to over ripe tomatoes (Tengeru, Rodade).

It was therefore necessary that the market should be segmented to meet the unique needs of the clients.

Competitiveness

The strength of the MoPO would be that the tomatoes would be graded (i.e. quality) and nicely packaged. Unlike other suppliers who are middlemen, the group is able to supply consistently as the group is an association of 100 urban producers with adequate land and water to produce large quantities consistently.

Demand by the potential buyers

- Ndola Central Hospital- 400 kg/ week.
- Supermarkets- 270 kg / week,
- Freshpikt- 10 tons to 60 tons per supply

Production capacity of the Chipulukusu Vegetable Growers

Each farmer has a minimum area of half a Lima that will be reserved for growing tomatoes. Therefore, the hundred farmers' will have a minimum of 6.25 Ha per cycle and 12.5 Ha per year.

It was approximated that the production of tomatoes from CVG will be at 2,000 tons per year. Considering losses of about 20%, this will decline to about 1,600 tons. The 1,600

tons is the production that CVG will have to supply to its clients. The losses of 20% are reflected in monetary terms for CVG.

Price

Tomatoes supplied to Freshmark will fetch a price of K2500/Kg, Freshpikt at \$1/Kg (K5000/Kg), Supermarkets and hospitals indicated a price of K3200/Kg. The average price that was arrived at was K2000/Kg.

Production Calendar

It was agreed that there will be two production cycles in a year concurrently, and the harvest period would take two 6 months cycles with the help of good agricultural practices in order to supply the whole year.

Meeting buyers

The product will be delivered at the clients' doorstep.

Promotion

The product will be promoted by labelling the crates, distribution of promotional leaflets/brochures, participating in agricultural shows, and the community radio station.

PARTNER STRATEGY

CVG has a range of partners based on its functions and requirements as stipulated below.

1. Production and processing
 - a. Extension
 - Ministry of Agriculture and Cooperatives
 - IDE
 - b. Inputs
 - Rehma: seeds/fertilizers/pesticides
 - Minelands: as above
 - Hailange: as above
 - Ndola Hardware: sprayers, buckets, boots, masks
 - Merco/Norgroup: plastics
 - Jayhindi: packaging/plastic packing
 - ZAFFICO: poles
 - Sawmillers: slabs and timber
2. Product promotion and marketing
 - a. Radio Icengelo
 - Product promotion on community radio
 - b. Ministry of Agriculture & Cooperatives (MACO)

- Agriculture shows for product promotion
 - c. MACO/National Agriculture Information Service
 - Various printing services for advertisement
 - d. IDE
 - Marketing
 - Market research
3. Training
- a. MACO
 - Production and processing
 - b. Ministry of Community Development & Social Welfare
 - Child care & other community issues
 - c. Minelands
 - Management of agrochemicals
4. Finance and credit
- a. Citizens Economic Empowerment Commission (CEEC)
 - Credit
 - b. USAID MATEP
 - Product development financial assistance for export
 - c. MACO
 - Financial support to outgrower scheme
5. Transport
- a. FreshPikt
 - Transport own purchase of 10 tons and above
6. Land and water
- a. Ndola City Council
 - Access and ownership of land
 - b. Ministry of Lands
 - Title to land
 - c. Government department in charge of water
 - Access rights
 - d. Environmental Council of Zambia (ECZ)
 - Support for water quality management
7. Licences and permits
- a. MACO
 - Registration of cooperative
 - Support for tax exemption
 - Support for application to obtain Tender Board approval to supply to public institutions
 - b. Patents and Companies Registration Office (PACRO)
 - Registration of private entity
 - c. Zambia Revenue Authority (ZRA)
 - Obtaining tax exemption permit

FINANCIAL PLAN

Financial Plan model for Production and Marketing of Graded and Packaged Tomato

The model of the financial plan is based on the core activities being carried out by members at their respective farms (model A) while the Cooperative (model B) will largely be an administrative wing of the business. There will be cost center “A” and “B” respectively. A larger portion of variable and fixed costs will be handled by members.

General Assumptions

CVG will have 100 fully paid up members. Membership fee is estimated at K50,000 per annum and contribution towards capital investment will be K100,000 per member. The cooperative net profit will be distributed to members at the ratio of shares held by respective members of the Cooperative. Other assumptions are as follows:-

- At least 0.125 ha of land will be available per farmer
- There will be 100 farmers with a combined area of 12.5 ha
- CVG will be legally established by July 2009
- CVG will secure startup capital for equipment and tools, seed and other inputs
- CVG will secure a grant or Loan amounting K100 million
- Each member will be given all necessary tools, equipment and contribution towards the working capital.
- Financing will include
 - revolving fund of K100 million will be secured from the project as a grant and each farmer will receive K1,000,000 in form of inputs
 - Share capital from members @K100,000x 100 = K10 million
 - Equity from each farmer.

Assumptions for financial statements

Table 4. Income statement:

Income statement	Assumption
Total Cost of goods sold	19% of sales
Annual Increase in Expenses	2-8%
Maintenance expenses	0.2% of sales
Annual Increase in Salaries	2-3% annually

Increase in rentals	10% every 3 years
Average Losses on production	20%

Table 5. Balance sheet

Balance sheet	Assumption
Accounts receivable (credit sales not yet collected)	3 months
Inventories of seed, raw material and tomato	10% of the total cost of goods sold
Account payable	1 month of cost of sales
Expenses payable	20% of general expenses

Investment in Capital Items

Table 6. List and cost of equipment, tools and working capital

COST CENTER	DESCRIPTION	UOM	QTY	UNIT PRICE	TOTAL COST	CVG Group
Cooperative	Establishment costs	each	1	2,000,000	2,000,000	2,000,000
Cooperative	Furniture, chairs etc	each	1	3,000,000	3,000,000	3,000,000
Cooperative	Office equipment,	each	1	700,000	700,000	700,000
Cooperative	Plastic crates	each	20	20,000	400,000	400,000
Cooperative	Storage container	each	1	-	-	-
Cooperative	Weighing scale	each	1	2,000,000	2,000,000	2,000,000
Cooperative	Working capital	each	1	8,200,000	8,200,000	8,200,000
Cooperative Total					16,300,000	16,300,000
Farmer	Garden folks	each	3	35,000	105,000	10,500,000
Farmer	Gloves	each	1	20,000	20,000	2,000,000
Farmer	Gum boots	each	1	80,000	80,000	8,000,000
Farmer	Hoes	each	3	20,000	60,000	6,000,000
Farmer	Nose and mouth mask	each	1	10,000	10,000	1,000,000
Farmer	Overall	each	1	80,000	80,000	8,000,000
Farmer	Rakes	each	1	20,000	20,000	2,000,000
Farmer	Shovel	each	1	40,000	40,000	4,000,000
Farmer	Sickle shears	each	1	20,000	20,000	2,000,000
Farmer	Slashers	each	1	22,000	22,000	2,200,000
Farmer	Sprayer	each	1	300,000	300,000	30,000,000
Farmer	Watering cane	each	4	20,000	80,000	8,000,000
Farmer	Working capital per farmer	each	1	2,000,000	2,000,000	200,000,000
Farmer Total					2,837,000	283,700,000
Grand Total					19,137,000	300,000,000

A working capital of K2 million is estimated for each farmer even though the required amount is twice this figure per farmer per annum. The general cost assumptions for tomato production related to this planning are summarized in Table 7.

Table 7. General assumptions

DESCRIPTION	UOM	Unit Amount
Plot area of 25mx25m per cycle	ha	0.0625
Number of 25mx25m plots per memb	No	2
Number of farmers	No	1
Total available area for 2 cycles	ha	0.125
Harvest rate kg/ha	kg/ha	160,000
Total harvest per annum	kg	20,000
Estimated Variable cost per kg	ZMK/kg	265
Estimated Fixed cost per kg	Zmk/kg	893
Production cost unit	Kg/unit	1,159
Sales price	zmk/kg	2,000
Total sale for each member	zm	40,000,000
Estimated Gross profit per unit	zmk/kg	841.24

The total production cost is K1,159 per kg subject to other refinements that would be made later.

It is estimated that each farmer would make a gross profit of K841.24 per Kg implying that a gross profit of K16.8 million would be realized by each producer every year and at a factor of 100 members for the cooperative. The cost of goods sold according to inputs is shown in Table 8 and 9.

Table 8. Variable costs for the Nursery and the field (cost of goods sold).

CENTER	INPUT	DESCRIPTION	UOM	QTY	UNIT PRICE	TOTAL COST
Nusery	Chemicals	Copper Ox Chloride	kg	0.5	22,000	11,000
Nusery	Chemicals	Dithane	mls	0.5	25,000	12,500
Nusery	Chemicals	Sticker	mls	100	1,500	150,000
Nusery	Chemicals	Bravo - spot	mls	100	200	20,000
Nusery	Chemicals	Insecticide - Phoskill	mls	100	1,500	150,000
Nusery	Fertiliser	Super "D"	kg	1	5,800	5,800
Nusery	Seed	Seed A	kg	0.025	750,000	18,750
Nusery Total						368,050
Field	Chemicals	Spraying 1	ha	4.5	84,000	378,000
Field	Chemicals	Spraying 2	ha	0.125	84,000	10,500
Field	Chemicals	Benamyl	ha	0.125	1,600,000	200,000
Field	Chemicals	SAAF	ha	0.125	2,000,000	250,000
Field	Fertiliser	Fertilising	ha	3.5	240,000	840,000
Field	Fertiliser	Fertilisers	kg	1.125	5,800	6,525
Field	Harvesting	Harvesting	kg	20000	40	800,000
Field	Land preparation	Land preparation	ha	0.125	6,700,000	837,500
Field	Land preparation	Piting	ha	0.125	1,700,000	212,500
Field	Stakes	Transportation	ha	0.125	320,000	40,000
Field	Stakes	staking activity @ wiring	ha	0.125	2,500,000	312,500
Field	Stakes	Purchase slabs	ha	0.125	80,000	10,000
Field	Watering	Tomato beds	ha	20	40,000	800,000
Field	Weeding	Tomato beds	ha	0.125	2,000,000	250,000
Field Total						4,947,525
Grand Total						5,315,575

Table 9. Table fixed costs per annum

Fixed	Labor	Farmer	Salary	zmk	1	10,000,000	10,000,000
Fixed	Labor	Farmer	Land rent	zmk	1	500,000	500,000
Fixed	Labor	Farmer	House rent	zmk	1	960,000	960,000
Fixed	Labor	Farmer	Utilities	zmk	1	250,000	250,000
Fixed	Labor	Farmer	Depreciation	zmk	1	5,646	5,646
Fixed	Labor	Farmer	Administration costs	zmk	1	500,000	500,000
Fixed	Labor	Farmer	Membership fee	zmk	1	50,000	50,000
Fixed Total							12,265,646

The total production cost: Variable costs = K5,315,575 plus Expenses = K12,265,646 which is the total production cost of tomato of K17,581,221 per annum per farmer.

Project Income Statement

It is assumed that each farmer will produce 20,000 Kg and sale a minimum of 15,000 Kg of tomato per annum and all of it will be sold by the Cooperative at not less than K2,000 per kilogram. It is preferred that tomato be sold at K2,500 – K3,000 per kilogram by the Cooperative while K2,000 per kilogram be a transfer price from the farmer to the Cooperative. Straight line depreciation has been used to calculate the depreciation captured in financial statements. Each farmer will obtain a loan amounting to K1million during the period through the Cooperative arrangement.

The Following financial statements (**income statement, balance sheet, cash flow and evaluation tables**) explain how the Cooperative's finances will be handled and the design for farmers to adopt.

Table 10. Cost calculation in put assumptions

Year 1 model inputs				
<i>Use this area to capture key components of the Profit and Loss Statement and the Balance Sheet for the first year only.</i>				
1. Year-one revenue expectancy				
	Tomato	cabagge	<Product 3>	<Product 4>
Number of kgs sold annually	20,000			
Average sales price per unit	2,000			
Annual revenue per product	40,000,000	0	0	0
Total year 1 revenue	40,000,000			
2. Year 1 cost of goods sold				
	<i>Tomato</i>			
Expected gross margin per product % of revenue				
Annual cost of goods sold per product	5,315,575	0	0	0
Total year 1 cost of goods sold	5,315,575			
3. Annual maintenance, repair, and overhaul				
Factor (%) on sales	0.20%			
4. Number of years for straight-line depreciation				
	5			
5. Annual tax rate				
	35%			
6. If long-term debt is being used to finance operations, enter the total loan value.				
	1,000,000			

Even though production is at 20,000 Kg per annum, it is assumed that each farmer would incur a loss of 25% on revenue in the first year and 20% in the subsequent year.

Table 11. Income statement for CVG cooperative

Year-by-year profit and loss assumptions					
	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
Annual cumulative price (income) increase	-	2.00%	2.10%	2.20%	2.50%
Annual losses on production	30.00%	25.00%	20.00%	20.00%	20.00%
Annual cumulative inflation (expense) increase	-	1.00%	2.00%	3.00%	4.00%
Interest rate on ending cash balance	0.50%	2.00%	2.00%	2.00%	2.00%
Revenues					
	Year 1	Year 2	Year 3	Year 4	Year 5
Total revenues	28,000,000	34,272,000	34,991,712	35,761,530	36,655,568
Total Cost of goods sold	5,315,575	5,368,731	5,476,105	5,640,389	5,866,004
Gross margin	22,684,425	28,903,269	29,515,607	30,121,141	30,789,564
	81%	84%	84%	84%	84%
Other revenue [source]		0		0	0
Interest income		0	0	0	0
Total revenue	22,684,425	28,903,269	29,515,607	30,121,141	30,789,564
Operating expenses					
Salaries/wages/administrative	10,000,000	10,100,000	10,302,000	10,611,060	11,035,502
Revolving fund repayment	-	300,000	300,000	300,000	300,000
Depreciation expenses	-	177,558	281,316	387,074	494,832
Insurance		-	-	-	-
Maintenance, repair	-	1,776	1,793	1,811	1,828
Land rent	250,000	252,500	257,550	265,277	275,888
House rent	480,000	484,800	494,496	509,331	529,704
Utilities (Grading and packaging)	125,000	126,250	128,775	132,638	137,944
General administration	250,000	250,000	250,000	250,000	250,000
Membership	50,000	50,000	50,000	50,000	50,000
Total operating expenses	11,155,000	11,742,884	12,065,930	12,507,190	13,075,698
Operating income	11,529,425	17,160,386	17,449,676	17,613,951	17,713,866
	41%	50%	50%	49%	48%
Interest expense on long-term debt	236,225	161,037	63,293	0	0
Operating income before other items	11,293,200	16,999,348	17,386,383	17,613,951	17,713,866
Loss (gain) on sale of assets					-
Other unusual expenses (income)			-	-	-
Earnings before taxes (EBIT)	11,293,200	16,999,348	17,386,383	17,613,951	17,713,866
Operating margin	40%	50%	50%	49%	48%
Taxes on income	1%	112,932	169,993	173,864	177,139
Net income (loss)	11,180,268	16,829,355	17,212,520	17,437,811	17,536,727
Net profit margin	40%	49%	49%	49%	48%

Tabel 12. Projected balance sheet

Chipulukusu Vegetable Growers- Ndola Most Promising Option—Tomato production Balance sheet projections per farmer						
Assets	Initial balance	Year 1	Year 2	Year 3	Year 4	Year 5
Cash and cash equivalent (short-term invest)	1,000,000	9,013,152	25,056,255	41,288,034	58,273,922	75,465,987
Accounts receivable	2,260,000	2,305,200	2,351,304	2,398,330	2,446,297	2,495,223
Total inventory	265,882	278,911	292,577	306,913	321,952	337,728
Total current assets	3,525,882	11,597,262	27,700,136	43,993,278	61,042,171	78,298,938
Storage container			500,000	1,000,000	1,500,000	2,000,000
Office equipment						
Furniture						
Machinery and equipment		879,000	879,000	879,000	879,000	879,000
Vehicles and cycles						
Less: Accumulated depreciation expense		0	177,558	458,874	845,948	1,340,780
Net Fixed Assets	0	879,000	1,201,442	1,420,126	1,533,052	1,538,220
Deposits						
Other long-term assets		0	0	0	0	0
Total assets	3,525,882	12,476,262	28,901,578	45,413,404	62,575,223	79,837,158
	3,525,883	12,476,262	28,901,578	45,413,403	62,575,222	79,837,158
Liabilities	Initial balance	Year 1	Year 2	Year 3	Year 4	Year 5
Accounts payable	265,882	278,911	292,577	306,913	321,952	337,728
Expenses payable	414,776	435,515	457,291	480,156	504,163	529,372
Owners Account		0	0	0	0	0
Total current liabilities	680,659	714,426	749,868	787,069	826,116	867,099
Long-term debt from loan payment calculator	1,000,000	749,373	423,559	0	0	0
Other long-term debt						
Total debt	1,680,659	1,463,799	1,173,427	787,069	826,116	867,099
Other liabilities		0	0	0	0	0
Total liabilities	1,680,659	1,463,799	1,173,427	787,069	826,116	867,099
Shareholder Equity	Initial balance	Year 1	Year 2	Year 3	Year 4	Year 5
Owner's equity	1,845,224	11,012,463	16,547,883	16,233,547	15,918,508	15,602,733
Invested Paid-in capital		0	0	0	0	0
Retained earnings		0	11,180,268	28,392,787	45,830,599	63,367,326
Total shareholders equity	1,845,224	11,012,463	27,728,151	44,626,334	61,749,107	78,970,059
Total liabilities and equity	3,525,883	12,476,262	28,901,578	45,413,403	62,575,222	79,837,158

Table 13. Projected Cash Flow statement

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Operating activities						
Net income	11,180,268	16,829,355	17,212,520	17,437,811	17,536,727	80,196,680
Depreciation	-	177,558	281,316	387,074	494,832	1,340,780
Changes in Accounts receivable	(45,200)	(46,104)	(47,026)	(47,967)	(48,926)	(235,223)
Changes in Inventories	(13,028)	(13,667)	(14,336)	(15,039)	(15,776)	(71,846)
Changes in Accounts payable	20,739	21,776	22,865	24,008	25,208	114,595
Revolving fund		(1,000,000)				(1,000,000)
Total operating activities	11,142,778	15,968,918	17,455,338	17,785,888	17,992,066	80,344,987
Investing activities						
Investment in fixed assets	(879,000)	(500,000)	(500,000)	(500,000)	(500,000)	(2,879,000)
Other investing cash flow items				-	-	-
Total investing activities	(879,000)	(500,000)	(500,000)	(500,000)	(500,000)	(2,879,000)
Financing activities						
Long-term debt/financing	(250,627)	(325,815)	(423,559)	0	0	(1,000,000)
Invested capital		-	-	-	-	-
Owners account	(1,000,000)					(1,000,000)
Total cash dividends paid						-
Total financing activities	(1,250,627)	(325,815)	(423,559)	0	0	(2,000,000)
Beginning cash balance	-	9,013,152	24,156,255	40,688,034	57,973,922	
Cumulative cash flow	9,013,152	15,143,103	16,531,779	17,285,888	17,492,066	75,465,987
Ending cash balance	9,013,152	24,156,255	40,688,034	57,973,922	75,465,987	

Table 14. Break even analysis input table

BREAK-EVEN ANALYSIS	
Fixed Costs	
<i>Costs required to produce the first unit of tomato.</i>	
Definition	Cost total
Salary and wages	10,409,712
Revolving fund	300,000
Depreciation	335,195
Insurance	0
Maintenance	1,802
Land rent	260,243
House rent	499,666
Utilities	130,121
General administration	250,000
Membership fees	50,000
subtotal	12,236,740
Variable Unit Costs	
<i>Costs that vary directly with the production of one additional unit.</i>	
Definition	unit Cost
Seeds	0.94
Chemicals	59.10
Fertilisers	42.29
Land preparation and pitting	52.50
Stakes and stake fixing/wiring	18.13
Watering activities	52.50
Harvesting activities	40.00
subtotal	265.45
Unit Selling Price:	2,000
<i>The amount of money charged to the customer for each unit of tomato sold</i>	
Expected Unit Sales:	20,000
<i>Number of units of tomato projected to be sold over a specific period of time.</i>	
Break-Even Units:	7,054.72

Table 15. Production towards the break-even and profitability

BREAK-EVEN ANALYSIS					
Total Fixed Costs:	12,236,740				
Total Variable Unit Costs:	265.45				
Expected Unit Sales:	20,000				
Price per kg:	2,000				
<div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> Chipulukusu Vegetable Growers- Ndola Tomato Production </div>					
Break Even Units: (kgs)	7,054.72				
Units	Fixed Cost	Variable Cost	Total Cost	Revenue	Gross margin
6,500	12,236,740	1,725,441	13,962,181	13,000,000	-962,181
6,600	12,236,740	1,751,987	13,988,726	13,200,000	-788,726
6,700	12,236,740	1,778,532	14,015,272	13,400,000	-615,272
7,055	12,236,740	1,872,692	14,109,432	14,109,432	0
9,000	12,236,740	2,389,073	14,625,812	18,000,000	3,374,188
9,100	12,236,740	2,415,618	14,652,358	18,200,000	3,547,642
9,200	12,236,740	2,442,163	14,678,903	18,400,000	3,721,097
15,000	12,236,740	3,981,788	16,218,527	30,000,000	13,781,473
16,000	12,236,740	4,247,240	16,483,980	32,000,000	15,516,020
17,000	12,236,740	4,512,693	16,749,432	34,000,000	17,250,568
18,000	12,236,740	4,778,145	17,014,885	36,000,000	18,985,115
19,000	12,236,740	5,043,598	17,280,337	38,000,000	20,719,663
19,100	12,236,740	5,070,143	17,306,883	38,200,000	20,893,117
19,200	12,236,740	5,096,688	17,333,428	38,400,000	21,066,572
19,300	12,236,740	5,123,233	17,359,973	38,600,000	21,240,027
19,400	12,236,740	5,149,779	17,386,518	38,800,000	21,413,482
19,500	12,236,740	5,176,324	17,413,064	39,000,000	21,586,936
19,600	12,236,740	5,202,869	17,439,609	39,200,000	21,760,391
19,700	12,236,740	5,229,414	17,466,154	39,400,000	21,933,846
19,800	12,236,740	5,255,960	17,492,699	39,600,000	22,107,301
19,900	12,236,740	5,282,505	17,519,245	39,800,000	22,280,755
20,000	12,236,740	5,309,050	17,545,790	40,000,000	22,454,210

The average fixed costs amount to K12, 236,740 while the variable cost is estimated at K265.45 per kilogram of tomato produced. The break-even quantity will be expected at a sales volume 7,055 Kg of tomato for each farmer (nb. The gross margin at the maximum level of sales ~ 20,000 Kg averages about K28.4 million, assuming losses of 20-25%).

Ratio Analysis

Ratios are common in all financial evaluations to measure the progress of the Cooperative and to compare a business to its competitors. In this evaluation **liquidity ratios** have been used to measure the amount of cash available to cover expenses by farmers. **Profitability ratios** have been used to control income through high sales, larger margins and realize more from expenses. **Efficiency ratios** to help in controlling the business through use of credit, stock control and management of assets. Table 15 captures some of the most common ratios.

Table 16. Ratio analysis

Year>>	1	2	3	4	5	Average
Liquid Ratios						
Current Ratio	16.233	36.940	55.895	73.891	90.300	55
Quick ratio	15.843	36.550	55.505	73.501	89.910	54
Working capital	6,000,000	6,000,000	6,000,000	6,000,000	6,000,000	6,000,000
Turnover of cash ratio	5	6	6	6	6	6
Profitability ratios						
Gross profit	81%	84%	84%	84%	84%	84%
Operating profit	41%	50%	50%	49%	48%	48%
Net Profit Margin	40%	49%	49%	49%	48%	47%
Management Effectiveness						
Return on Assets Ratio = ROA	90%	58%	38%	28%	22%	47%
Return on Equity Ratio = ROE	102%	102%	106%	110%	112%	106%
Return on Investment ratio=ROI	103%	103%	107%	111%	114%	107%
Asset Management Efficiency						
Return on sales	49%	58%	58%	58%	57%	56%
Total Debt to total Assets	13%	7%	5%	5%	6%	7%

A low liquidity ratio may imply that the cooperative may not be able to pay off bills as rapidly as it should while a high ratio may mean money is tied up in stocks (see working capital). This is the case for CVG during start up with a ratio which is on the high side. The turn-over of cash ratio on the other hand is acceptable.

The net profit ratio shows the effectiveness of the Cooperative and depends on the nature of business but in this case a farmer will realize high earnings margin due to minimal expenses. The return on Investment (ROI) is often used in financial evaluation. The ROI for CVG is high indicating that farmers will be expected to be efficient and investment in capital items will be minimal.

Sensitivity Analysis

Table 17 shows what would occur with changes in the quantity and value of sales on profitability

Table 17. Sensitivity analysis

Sensitivity analysis	Worst case	Most likely	Best-case
Quantity of Tomato sold kgs	7,000	20,000	20,000
Average income	11,347,433	32,421,000	40,526,542
Average net Profit	(5,857,156)	16,039,339	24,438,536
Payback Period yrs	3	1.4	0.98
Return on Investment	25%	70%	88%

A worst scenario would be if each farmer sold only 7,000 Kg per annum resulting in a loss of K5.9 million. The best scenario would be with sales volumes of 20,000 Kg (but with losses less than 20%). Different scenarios may be developed using the calculator in Table 18.

Table 18. Model calculator for sensitivity analysis for MoPO

Investment overview				
Project name: Production of Tomato				
Project sponsor: RUAF				
Date of request: 5.8.2009				
General description of benefits: Refer to document				
Cash flow and ROI statement				
BENEFIT DRIVERS	YEAR			
	0	1	2	3
Tomato sale		28,000,000	34,272,000	34,991,712
other products				
Total annual Sales		28,000,000	34,272,000	34,991,712
Factor		100%	100%	100%
Total Sales		28,000,000	\$34,272,000	\$34,991,712
Costs	Year 0	Year 1	Year 2	Year 3
Total	17,520,575	17,161,614	17,592,036	18,197,579
Benefits	Year 0	Year 1	Year 2	Year 3
Annual benefit flow	(17,520,575)	10,838,386	16,679,964	16,794,133
Cumulative benefit flow	(17,520,575)	(6,682,189)	9,997,775	26,791,908
Discounted benefit flow	Year 0	Year 1	Year 2	Year 3
Discounted costs	17,520,575	13,201,242	10,409,488	8,282,922
Discounted benefits	-	21,538,462	20,279,290	15,927,042
Total discounted benefit flow	(17,520,575)	8,337,220	9,869,801	7,644,121
Total cumulative discounted benefit flow	(17,520,575)	(9,183,355)	686,446	8,330,567
Initial investment	Year 0	Year 1	Year 2	Year 3
Initial investment	1,000,000			
Implementation costs	16,470,575	17,111,614	17,542,036	18,147,579
Ongoing support costs - revolving funds				
Training costs				
Membership	50,000	50,000	50,000	50,000
Total costs	17,520,575	17,161,614	17,592,036	18,197,579
ROI measures				
Cost of capital	30%			
Net present value	8,330,567			
Return on investment		70%		
Payback (in years)	1.40			