



RAPE ENTERPRISE BUDGETS

Prepared as part of

'The study on the Botswana Horticulture Value Chain mapping and Analysis'

(A study Commissioned by Local Enterprise Authority)

DATE: March 2024

TABLE OF CONTENTS

1. INTRODUCTION	1
2. APPROACH AND METHODOLOGY	1
3. ENTERPRISE BUDGET FRAMEWORK	1-3
4. SAMPLING OF RESPONDENTS	3
5. LIMITATIONS TO ENTERPRISE BUDGETING	3-4
6. RAPE ENTERPRISE BUDGETS	4-31
7. CONSTRAINTS TO PRODUCTION OF RAPE	31

LIST OF TABLES;

Table 1	Districts selected for enterprise budgeting
Table 2	Total production costs for rape –North East District
Table 3	Total production costs for rape –Chobe District
Table 4	Total production costs for rape –Kgatleng District
Table 5	Total production costs for rape –Central District
Table 6	Total production costs for rape –North East District
Table 7	Total production costs for rape –South East District
Table 8	Total production costs for rape –Boteti District
Table 9	Total production costs for rape –Ngami District
Table 10	Constraints to production of Rape

LIST OF FIGURES;

Figure 1	Distribution of production costs for rape –North East District
Figure 2	Detailed Enterprise Budget for rape –North East District
Figure 3	Distribution of production costs for rape –Chobe District
Figure 4	Detailed Enterprise Budget for rape –Chobe District
Figure 5	Distribution of production costs for rape –Kgatleng District
Figure 6	Detailed Enterprise Budget for rape –Kgatleng District
Figure 7	Distribution of production costs for rape –Central District
Figure 8	Detailed Enterprise Budget for rape –Central District
Figure 9	Distribution of production costs for rape –North East District
Figure 10	Detailed Enterprise Budget for rape –North East District
Figure 11	Distribution of production costs for rape –South East
Figure 12	Detailed Enterprise Budget for rape –South East District
Figure 13	Distribution of production costs for rape –Boteti District
Figure 14	Detailed Enterprise Budget for rape –Boteti District
Figure 15	Distribution of production costs for rape –Ngami District
Figure 16	Detailed Enterprise Budget for rape –Ngami District

ANNEXURES:

Annexure 1 Enterprise Budget Data Collection tool (Sample Questionnaire) Page 33-34

1. INTRODUCTION

This report was prepared as part of the study on the Botswana Horticulture Value Chain Mapping and analysis. The study required the preparation of enterprise budgets for the five crops (enterprises) namely; cabbage, tomato, potato, onion and rape. This report contains enterprise budgets for the rape enterprise prepared for various Districts considered during the study. The purpose of the rape enterprise budgets is to measure the efficiency and relative profitability of rape as indicated by the enterprise budgets for different farmers.

2. APPROACH AND METHODOLOGY

In preparing the enterprise budgets primary data was collected from farmers in various districts, randomly sampled from the list of farmers identified for the study. A standard questionnaire –enterprise budget data collection tool, was designed and administered to the respondents. The questionnaire was designed to collect data on the actual yield, unit selling price of produce, variable costs for the rape enterprise.

The variable costs were standardized and organized into distinctive cost centres, namely; planting material, fertilizers, agro chemicals, labour costs, and other pre-harvest costs, harvest and distribution costs, and other variable costs directly attributable to production. The study did not collect data on the overheads (operational expenses) incurred at each farm, but rather focused only on prime costs. I.e. variable production costs incurred for each enterprise. The decision not to include the overheads is that they are usually incurred at the business level and not crop level.

The gross margins and gross margin percentages (%) were computed for each enterprise budget. The sensitivity analysis was also carried out for each enterprise budget. Sensitivity analysis is a financial model which predicts the outcomes given a specific range of variables. In this report, the model assumes the changes in revenue and variable costs given the changes in the yield achieved by the farmer. The model give scenarios for revenue and total variable costs are different levels of output.

Lastly, the study also considered the common constraints to production experienced by farmers who responded to the questionnaire for enterprise budgets. The respondents were asked to share the constraints to production of Rape. The constraints to production are documented in Table 10- Common constraints / challenges in production of rape.

3. ENTERPRISE BUDGET FRAMEWORK

The study adopted a standard format for preparation of enterprise budgets. Extract 1 indicate the format used and followed during preparation of enterprise budgets. Below the extract are the terms, definitions and explanations of items included in the budgets;

Extract 1: Standard format for the enterprise budget

		BWP /HA	Unit basis
1	REVENUE (R) (yields * unit selling price)	xxx	xxx
2	LESS TOTAL VARIABLE COSTS (TVC)		
2.1	Planting material	xxx	xxx
2.2	Fertilizers	xxx	xxx
2.3	Agrochemicals-Pesticides, fungicides, etc	xxx	xxx
2.4	Labour costs	xxx	xxx
2.5	Other pre-harvest costs*	xxx	xxx
2.6	Harvest and distribution costs	xxx	xxx
2.7	Other variable costs attributable to production	xxx	xxx
	Total Variable Costs (TVC)	xxx	xxx
3	GROSS MARGIN	xxx	xxx
4	GROSS MARGIN%	Xxx%	Xxx%

Terms and definitions used in the enterprise budget;

a) Revenue –Revenue represents gross inflows of cash generated from the sale of produce, computed as yield multiplied by the unit selling price.

b) Variable costs –Variable costs are costs directly attributable to production of each selected crop from the planting stage throughout to maturity, harvest and sale to the market. The variable costs are grouped standard cost centres namely; planting material, fertilizers, agro chemicals, labour costs, and other pre-harvest costs, harvest and distribution costs, and other variable costs directly attributable to production.

c) Fixed costs –Fixed costs are all other costs not directly attributable to production. The fixed costs do not vary with the level of production. I.e. they remain constant throughout production and the cropping season.

d) Gross margin –The gross margin is the resulting return from production and sale of produce. It is the difference between the revenue and total variable costs. The gross profit margin is a performance metric which measures the profitability of an enterprise, after taking into account all production costs.

e) Gross margin %- The gross margin percentage (%) is the gross margin expressed as percentage of revenue.

f) Net profit margin –Net profit margin is the resulting profit after deducting total production costs and operating expenses (overheads) from revenue. The net profit margin was not computed since the overheads were not considered during the study. The overheads are non production costs incurred in the ordinary course of running the farming business.

g) Whole farm budget –Is the budget prepared for all farm operations .i.e. considering all enterprises and other revenue streams, together with the farm operational costs.

h) Sensitivity analysis – Sensitivity analysis is a financial model which predicts the outcomes given a specific range of variables. In this report, the model assumes the changes in revenue and costs given the changes in the yield achieved by the farmer. The model give scenarios for revenue and total variable costs are different levels of output.

i) Breakeven price – Is computed as total variable costs divided by the output or (yield). This is the price at which when produce is sold to the market, the revenue generated will fully cover the total variable costs and result in a nil or zero profit.

4. SAMPLING OF RESPONDENTS

The respondents to the rape enterprise budgets were sampled randomly from various districts in the country. Table 1 below; indicate the districts from which respondents were selected for the Rape enterprise budgets;

Table 1: Districts selected for enterprise budgeting

Rape	
North East District Chobe District Kgatleng District Central District	North East District South East District Boteti District Ngami District

5. LIMITATIONS TO ENTERPRISE BUDGETING

- a. The enterprise budgets are prepared using the historical data collected from the sampled farmers. The data on yields, revenue and costs shared by the farmers may not be a true reflection of the actual results realized by the farmer.
- b. The allocation of costs such as fertilizers, agro-chemicals and labour to a single enterprise may not be accurate since it is spread to multiple enterprises, in instances where a farmer produce other enterprises alongside the selected crop. The failure to allocate and apportion costs accurately has the potential to distort the bottom line gross margins presented in each enterprise budget.
- c. Other costs relating to production may have been omitted by the farmers during the study, thereby distorting the gross margins.
- d. The farmers were not able to provide data on the crops they had no prior production experience on. It was difficult therefore difficult to source information on all the crops from one farmer. The study had to approach a sizeable number of farmers to collect data. For example; in most Districts, the majority of farmers did not have production data for potatoes.

e. Other respondents were reluctant to share their revenue and costs, citing confidentiality as the main reason for non response.

f. Time factor may have played a role in the study not being able to collect data for all crops in all districts.

6. RAPE ENTERPRISE BUDGETS

The current budgets for the rape enterprise were constructed from the data collected from farmers in selected districts.

6.1 Rape Enterprise Budget –North East District

Total costs of production;

Total costs of production for rape include planting material, fertilizers, agro chemicals, direct labour costs, other pre-harvest costs, harvest and distribution costs and other variable costs. Table 2; below indicate the total cost of production for rape amounted to BWP18, 582.

Table 2: Total production costs for Rape –North East District

	BWP/HA	% of total costs
Planting material	500.00	3%
Fertilizers	2,492.00	13%
Agrochemicals	840.00	5%
Labour costs	4,800.00	26%
Other pre-harvest costs*	1,400.00	8%
Harvest and distribution costs	6,100.00	33%
Other variable costs	2,450.00	13%
	18,582.00	100%

Distribution of production costs for rape production Figure 1 indicate that Harvest and distribution costs make up the largest percentage of the total production costs at 33%, while planting material, fertilizers, agro chemicals, labour costs, other pre-harvest costs and other variable costs constitute 3%, 13%,5%,26%,8% and 13% of the total production costs respectively;

Figure 1: Distribution of production costs for Rape-North East District

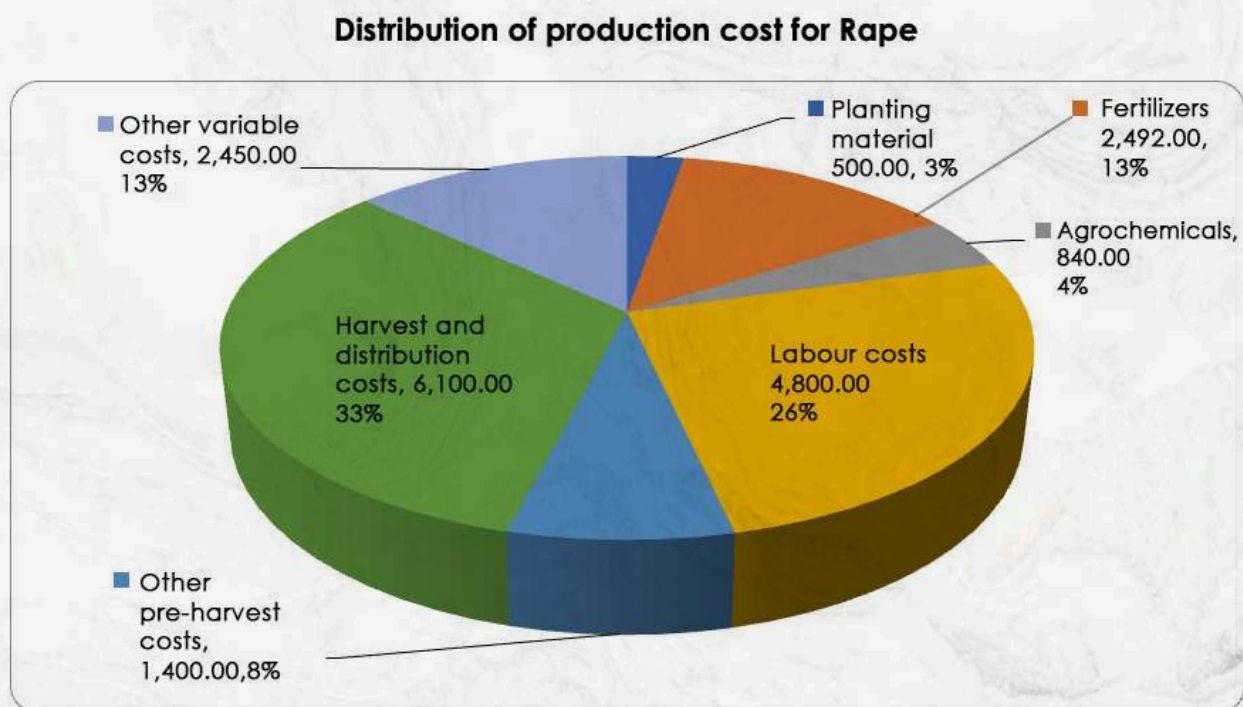


Figure 2: Detailed enterprise budget for rape in North East District;

Rape enterprise BUDGET		Tonota District - Gulushabe					
Sr.no	Cropping Area-1 HA-Open Field					Per HA	Unit value /
	Cropping in months	1 months					
	Item description	Unit	Output	Output	Unit SP	Value	Yield
		basis	in bundles	in bundles	Per bundle	in BWP	BWP/unit
1	Revenue from produce	bundles	10,000.00	10,000.00	4.00	40,000.00	4.00
	Sold in bundles @P each						
2	VARIABLE COSTS (VC)		Quantity	Unit cost		Total cost	Cost / unit
2.1	PRODUCTION COSTS						
2.1.1	Planting material						
	Seeds - 1kg	1kg	2	250.00		500.00	0.05
2.1.2	Fertilizers						
i	2:3:2 Basel	50 Kg	2	576.00		1,152.00	0.12
ii	LAN - Top Dressing	50Kg	2	470.00		940.00	0.09
iii	Chicken Manure	50Kg	200	2.00		400.00	0.04
2.1.3	Pesticides Insecticides						
i	Chlorpyrifos	5 litres	2	120.00		240.00	0.02
ii	Cypermethrin	1 litre	2	150.00		300.00	0.03
iii	Aphiguard	1 litre	2	150.00		300.00	0.03
2.1.4	Permanent farm workers						
	Direct Labour @ 2 employees	Per month	4	1,200.00		4,800.00	0.48
2.1.5	Other Pre Harvest costs						
	Transport of inputs to the farm	per trip	2	200.00		400.00	0.04
	Land preparation	Tractor hire	1	1,000.00		1,000.00	0.10
	TOTAL PRODUCTION COSTS					10,032.00	1.00
3	POST HAVERST COSTS (VC)						
3.1	Harvest and distribution costs						
	Packaging material - Rubber band	1 Kg	1	100.00		100	0.01
	Transport to the market	per trip	40	150.00		6,000.00	0.60
3.2	Other variable costs						
	Electricity -borehole	Per month	3	750.00		2,250.00	0.23
	Fuel -Booster pump	Per week				-	-

"

	Airtime	Per month	1	200.00		200.00	0.02
	TOTAL POST HAVERST COSTS					8,550.00	0.86
4	TOTAL VARIABLE COSTS (VC)					16,132.00	1.61
5	OTHER VARIABLE COSTS					2,450.00	0.25
6	GROSS MARGIN					21,418.00	2.14
7	GROSS MARGIN %					54%	54%

Key Assumptions

a. The yield is approximately 10,000 bundles in a cropping area of one (1) hectare (HA). The yield, has taken into account the normal and abnormal losses / wastage experienced during production.

b. It is not clear how many plants were grown for this production. The farmer had purchased two (2) packets of 1 Kg seeds.

c. The gross revenue is calculated by multiplying the yield with the farm gate price. The farm gate price was established to be P4 per bundle. This is the price at which produce is sold to the market.

d. The gross margin is calculated by subtracting the variable costs from the revenue. The gross margin % is the gross margin expressed as percentage of revenue.

e. Net profit margin is calculated by subtracting the fixed costs from the gross margin.

f. The yields, revenue, variable costs and fixed costs vary from one farmer to the other in the district.

g. The yields are dependent on other variables such as climatic conditions in each ecological zone, farming practices, and the choice of inputs (fertilizers and agro chemicals) applied.

h. The gross profit margin for rape enterprise is approximately 54%, as indicated in the enterprise budget.

i. It is important to note that overheads or other operational costs are not included in the budget. These costs should be accounted for when compiling the whole farm budget. Examples of overheads include costs such as; depreciation of assets, interests / finance charges, bank charges, stationery, salaries of non production employees, etc.

Sensitivity analysis; Below is the sensitivity analysis for the actual output of rape for an enterprise budget in figure 2.

			Revenue						
			Decrease (-)			Actual	Increase (+)		
			30.0%	20.0%	10.0%	Price	10.0%	20.0%	30.0%
		Output	-2.80	-3.20	-3.60	4.00	4.40	4.80	5.20
			Revenue at different levels of output						
MINUS	30%	7,000.00	-	-	-	28,000.00	30,800.00	33,600.00	36,400.00
	20%	8,000.00	-	-	-	32,000.00	35,200.00	38,400.00	41,600.00
	10%	9,000.00	-	-	-	36,000.00	39,600.00	43,200.00	46,800.00
	Revenue	10,000.00	-	-	-	40,000.00	44,000.00	48,000.00	52,000.00
PLUS	10.0%	11,000.00	-	-	-	44,000.00	48,400.00	52,800.00	57,200.00
	20.0%	12,000.00	-	-	-	48,000.00	52,800.00	57,600.00	62,400.00
	30.0%	13,000.00	-	-	-	52,000.00	57,200.00	62,400.00	67,600.00

			Total Variable Costs (TVC)						
			Decrease (-)			Actual	Increase (+)		
			30.0%	20.0%	10.0%	cost	10.0%	20.0%	30.0%
			Total Variable costs at different levels of output						
		Output	-1.30	-1.49	-1.67	1.86	2.04	2.23	2.42
MINUS	30.0%	7,000.00	-9,105.18	10,405.92	11,706.66	13,007.40	14,308.14	15,608.88	16,909.62
	20.0%	8,000.00	-	-	-	14,865.60	16,352.16	17,838.72	19,325.28
	10.0%	9,000.00	-	-	-	16,723.80	18,396.18	20,068.56	21,740.94
	Total Cost	10,000.00	-	-	-	18,582.00	20,440.20	22,298.40	24,156.60
PLUS	10.0%	11,000.00	-	-	-	20,440.20	22,484.22	24,528.24	26,572.26
	20.0%	12,000.00	-	-	-	22,298.40	24,528.24	26,758.08	28,987.92
	30.0%	13,000.00	-	-	-	24,156.60	26,572.26	28,987.92	31,403.58

6.2 Rape Enterprise Budget –Chobe District

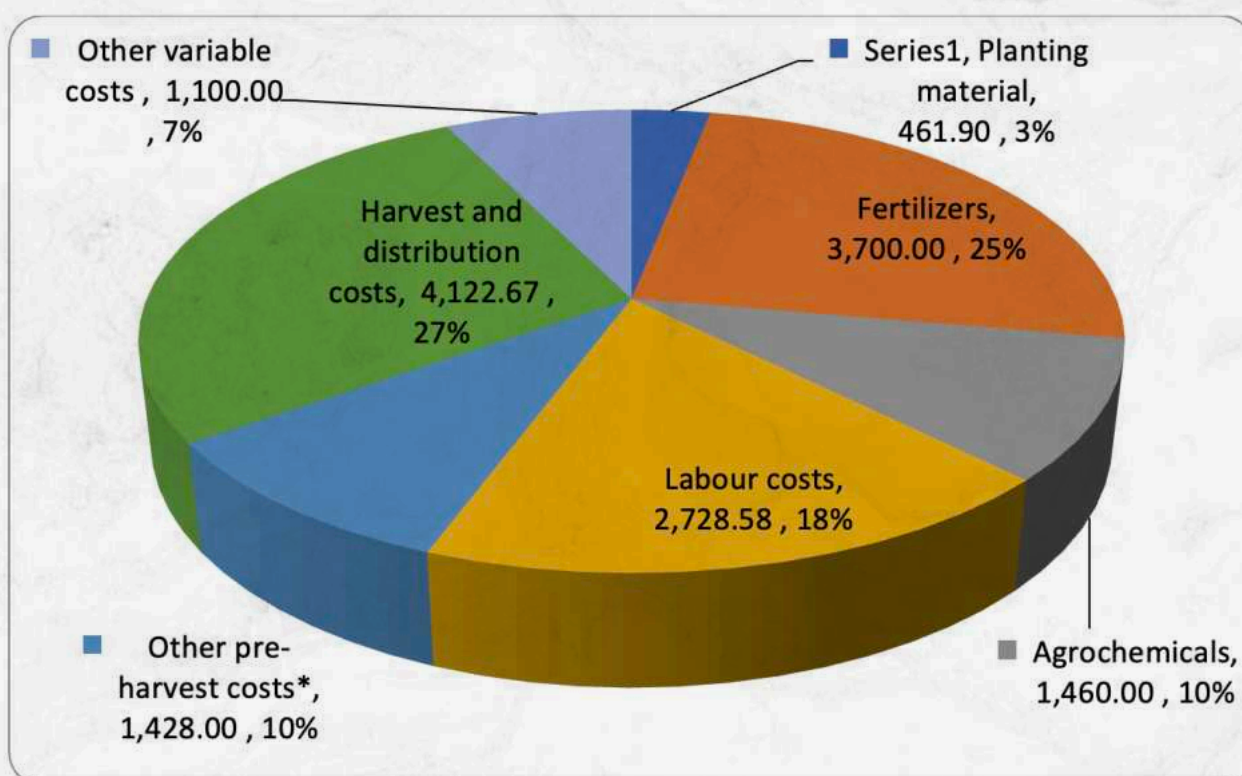
Total costs of production;

Total costs of production for rape include planting material, fertilizers, agro chemicals, direct labour costs, other pre-harvest costs, harvest and distribution costs and other variable costs. Table 3; below indicate the total cost of production for rape amounted to BWP15, 001.15.

Table 3: Total production costs for rape –Chobe District

	BWP/HA	% of total costs
Planting material	461.90	3%
Fertilizers	3,700.00	25%
Agrochemicals	1,460.00	10%
Labour costs	2,728.58	18%
Other pre-harvest costs*	1,428.00	10%
Harvest and distribution costs	4,122.67	27%
Other variable costs	1,100.00	7%
	15,001.15	100%

Distribution of production costs for Rape



	Rape enterprise BUDGET		Chobe District - Kazungula				
Sr.no	Cropping Area-1 HA-Open Field					Per HA	Unit value /
	Cropping in months	1 month					
	Item description	Unit	Output	Output	Unit SP	Value	Yield
		basis	in bundles	in bundles	Per bundle	in BWP	BWP / unit
1	Revenue from produce	bundles	10,000.00	10,000.00	4.00	40,000.00	4.00
	Sold in bundles @ P4 each						
2	VARIABLE COSTS (VC)		Quantity	Unit cost		Total cost	Cost / unit
2.1	PRODUCTION COSTS						
2.1.1	Planting material						
	Seeds - 1kg	1kg	2	230.95		461.90	0.05
2.1.2	Fertilizers						
i	2:3:2 Basal dressing	50 Kg	6	450.00		2,700.00	0.27
ii	Urea	50Kg	2	500.00		1,000.00	0.10
2.1.3	Pesticides Insecticides						
i	Chlorpyrifos	1 litre	2	350.00		700.00	0.07
ii	Cypermethrin	1 litre	2	380.00		760.00	0.08
2.1.4	Permanent farm workers						
	Direct Labour @ 2 employees	Per month	3	342.86		1,028.58	0.10
2.1.5	Casual labour						
	Labour planting @ 4 employees	7*4md	28	50.00		1,400.00	0.14
	labour weeding @2 employees	2*3	6	50.00		300.00	0.03
2.1.6	Other Pre Harvest costs						
	Transport of inputs to the farm	per trip	2	264.00		528.00	0.05
	Land preparation	Tractor hire	2	450.00		900.00	0.09
	TOTAL PRE-HARVEST COSTS					9,778.48	0.98
3	POST HAVERST COSTS (VC)						
3.1	Harvest and distribution costs						
	Casual labour @ 2 people	2*16 md	32	50.00		1,600.00	0.16
	Packaging material - Rubber band	No 32	67	22.00		1,467	0.15
	Transport to the market	month	4	264.00		1,056.00	0.11
3.2	Other variable costs						

	Electricity -borehole	Per month	3	300.00		900.00	0.09
	Fuel -Booster pump	Per week				-	-
	Airtime	Per month	1	200.00		200.00	0.02
	TOTAL POST HAVERST COSTS					5,222.67	0.52
4	TOTAL VARIABLE COSTS (VC)					13,901.15	1.39
5	OTHER VARIABLE COSTS					1,100.00	0.11
6	GROSS MARGIN					24,998.85	2.61
7	GROSS MARGIN %					62%	65%

Key assumptions

a. The yield is approximately 10,000 bundles in a cropping area of one (1) hectare (HA). The yield, has taken into account the normal and abnormal losses / wastage experienced during production.

b. It is not clear how many plants were grown for this production. The farmer has purchased two (2) packets of 1 Kg seeds.

c. The gross revenue is calculated by multiplying the yield with the farm gate price. The farm gate price was established to be P4 per bundle. This is the price at which produce is sold to the market.

d. The gross margin is calculated by subtracting the variable costs from the revenue. The gross margin % is the gross margin expressed as percentage of revenue.

e. Net profit margin is calculated by subtracting the fixed costs from the gross margin.

f. The yields, revenue, variable costs and fixed costs vary from one farmer to the other in the district.

g. The yields are dependent on other variables such as climatic conditions in each ecological zone, farming practices, and the choice of inputs (fertilizers and agro chemicals) applied.

h. The gross profit margin for rape enterprise is approximately 62%, as indicated in the enterprise budget.

i. It is important to note that overheads or other operational costs are not included in the budget. These costs should be accounted for when compiling the whole farm budget. Examples of overheads include costs such as; depreciation of assets, interests / finance charges, bank charges, stationery, salaries of non production employees, etc.

Sensitivity analysis: Below is the sensitivity analysis for the actual output of rape for an enterprise budget in figure 4.

			Revenue						
			Decrease (-)			Actual	Increase (+)		
			30.0%	20.0%	10.0%	Price	10.0%	20.0%	30.0%
		Output	-2.80	-3.20	-3.60	4.00	4.40	4.80	5.20
			Revenue at different levels of output						
MINUS	30%	7,000.00	-	-	-	28,000.00	30,800.00	33,600.00	36,400.00
	20%	8,000.00	-	-	-	32,000.00	35,200.00	38,400.00	41,600.00
	10%	9,000.00	-	-	-	36,000.00	39,600.00	43,200.00	46,800.00
	Revenue	10,000.00	-	-	-	40,000.00	44,000.00	48,000.00	52,000.00
PLUS	10.0%	11,000.00	-	-	-	44,000.00	48,400.00	52,800.00	57,200.00
	20.0%	12,000.00	-	-	-	48,000.00	52,800.00	57,600.00	62,400.00
	30.0%	13,000.00	-	-	-	52,000.00	57,200.00	62,400.00	67,600.00

			Total Variable Costs (TVC)						
			Decrease (-)			Actual	Increase (+)		
			30.0%	20.0%	10.0%	cost	10.0%	20.0%	30.0%
Total Variable costs at different levels of output									
		Output	-1.05	-1.20	-1.35	1.50	1.65	1.80	1.95
MINUS	30.0%	7,000.00	-7,350.56	-8,400.64	-9,450.72	10,500.80	11,550.88	12,600.96	13,651.04
	20.0%	8,000.00	-8,400.64	-9,600.73	10,800.83	12,000.92	13,201.01	14,401.10	15,601.19
	10.0%	9,000.00	-9,450.72	10,800.83	12,150.93	13,501.03	14,851.14	16,201.24	17,551.34
	Total Cost	10,000.00	-	-	-	15,001.15	16,501.26	18,001.38	19,501.49
PLUS			-	-	-				
	10.0%	11,000.00	11,550.88	13,201.01	14,851.14	16,501.26	18,151.39	19,801.51	21,451.64
	20.0%	12,000.00	12,600.96	14,401.10	16,201.24	18,001.38	19,801.51	21,601.65	23,401.79
	30.0%	13,000.00	13,651.04	15,601.19	17,551.34	19,501.49	21,451.64	23,401.79	25,351.94

6.3 Rape Enterprise Budget –Kgatleng District

Total costs of production;

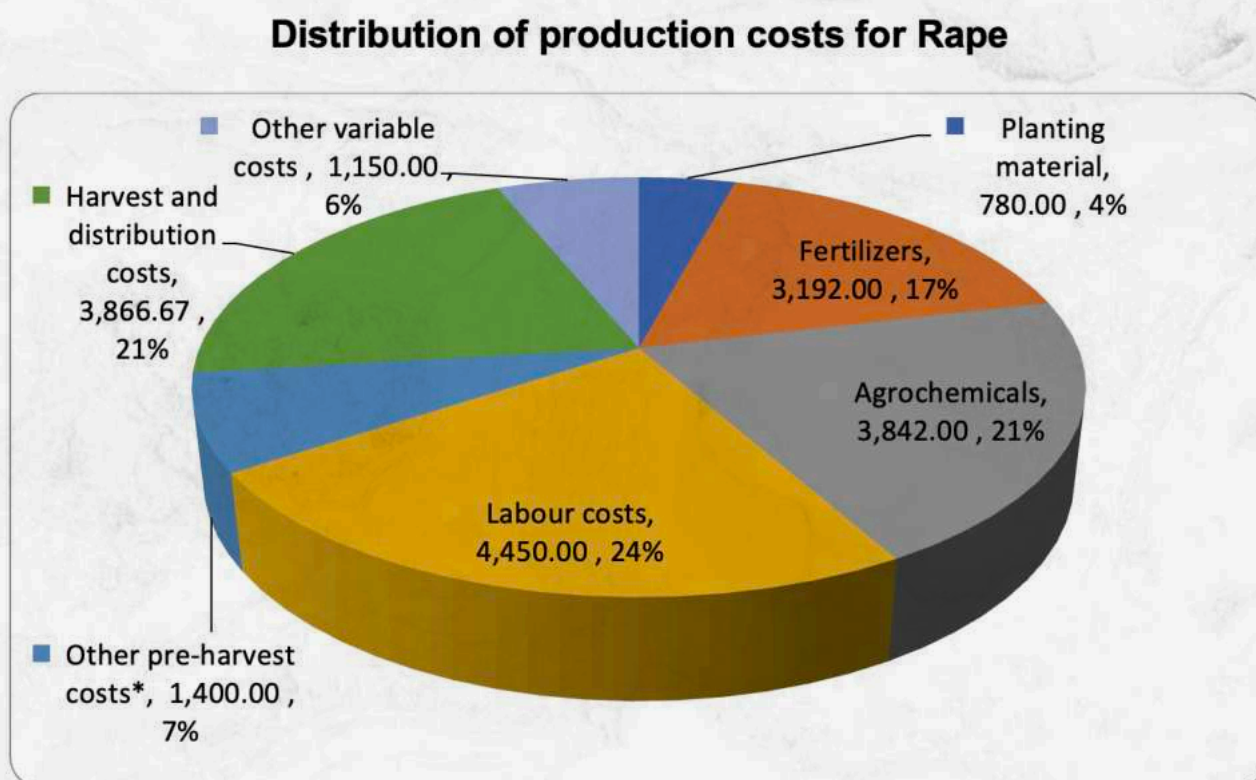
Total costs of production for rape include planting material, fertilizers, agro chemicals, direct labour costs, other pre-harvest costs, harvest and distribution costs and other variable costs. Table 4; below indicate the total cost of production for rape amounted to BWP18, 680.67.

Table 4: Total production costs for rape –Kgatleng District

	BWP/HA	% of total costs
Planting material	780.00	4%
Fertilizers	3,192.00	17%
Agrochemicals	3,842.00	21%
Labour costs	4,450.00	24%
Other pre-harvest costs*	1,400.00	7%
Harvest and distribution costs	3,866.67	21%
Other variable costs	1,150.00	6%
	18,680.67	100%

Distribution of production costs for rape production ; Figure 5 indicate that labour costs make up the largest percentage of the total production costs at 24%, while planting material, fertilizers, agro chemicals, other pre-harvest costs and other variable costs constitute 4%, 17%,21%,7%,21% and 6% of the total production costs respectively;

Figure 5: Distribution of production costs for Rape-Kgatleng District



Rape enterprise BUDGET		Kgatleng District - Malotwana					
Sr.no	Cropping Area-1 HA-Open Field					Per HA	Unit value /
	Cropping in months	1 month					
	Item description	Unit	Output in bundles	Output in bundles	Unit SP Per bundle	Value in BWP	Yield BWP / unit
1	Revenue from produce Sold in bundles @P5.50 each	basis bundles	8,000.00	8,000.00	5.50	44,000.00	5.50
2	VARIABLE COSTS (VC)		Quantity	Unit cost		Total cost	Cost / unit
2.1	PRODUCTION COSTS						
2.1.1	Planting material						
	Seeds - 5000	Packets	2	390.00		780.00	0.10
2.1.2	Fertilizers						
	Urea	50kg	1	1,700.00		1,700.00	0.21
	Calcium Nitrate	50kg	1	960.00		960.00	0.12
iii	Potassium Nitrate	50kg	1	532.00		532.00	0.07
2.1.3	Pesticides Insecticides						
i	Tenderbuff	5 litres	1	510.00		510.00	0.06
ii	Karate	1 litre	1	1,900.00		1,900.00	0.24
iii	Bladbuff	5 litres	1	532.00		532.00	0.07
iv	Alex BB5	1 litre	1	900.00		900.00	0.11
2.1.4	Permanent farm workers						
	Direct Labour	Per month	7	550.00		3,850.00	0.48
2.1.5	Casual labour						
	labour weeding @2 employees	2*2md	4	150.00		600.00	0.08
2.1.6	Other Pre Harvest costs						
	Transport of inputs to the farm	per trip	2	400.00		800.00	0.10
	Land preparation	Tractor hire	1	600.00		600.00	0.08
	TOTAL PRE-HARVEST COSTS					13,664.00	1.71
3	POST HAVERST COSTS (VC)						
3.1	Harvest and distribution costs						
	Casual labour @ 2 people	2 man days		50.00		-	-
	Packaging material - Rubber band	1 Kg	67	22.00		1,467	0.18
	Transport to the market	Per trip	6	400.00		2,400.00	0.30

3.2	Other variable costs						
	Electricity -borehole	<i>Per month</i>	3	300.00		900.00	0.11
	Fuel -Booster pump	<i>Per week</i>				-	-
	Airtime	<i>Per month</i>	1	250.00		250.00	0.03
	TOTAL POST HAVERST COSTS					5,016.67	0.63
4	TOTAL VARIABLE COSTS (VC)					17,530.67	2.19
5	OTHER VARIABLE COSTS					1,150.00	0.14
6	GROSS MARGIN					25,319.33	3.16
7	GROSS MARGIN %					58%	58%

Key assumptions

a. The yield is approximately 8,000 bundles in a cropping area of one (1) hectare (HA). The yield, has taken into account the normal and abnormal losses / wastage experienced during production.

b. The farmer had planted 10,000 plants as indicated under the planting material section of the enterprise budget..

c. The gross revenue is calculated by multiplying the yield with the farm gate price. The farm gate price was established to be P5.50 per bundle. This is the price at which produce is sold to the market.

d. The gross margin is calculated by subtracting the variable costs from the revenue. The gross margin % is the gross margin expressed as percentage of revenue.

e. Net profit margin is calculated by subtracting the fixed costs from the gross margin.

f. The yields, revenue, variable costs and fixed costs vary from one farmer to the other in the district.

g. The yields are dependent on other variables such as climatic conditions in each ecological zone, farming practices, and the choice of inputs (fertilizers and agro chemicals) applied.

h. The gross profit margin for rape enterprise is approximately 58%, as indicated in the enterprise budget.

i. It is important to note that overheads or other operational costs are not included in the budget. These costs should be accounted for when compiling the whole farm budget. Examples of overheads include costs such as; depreciation of assets, interests / finance charges, bank charges, stationery, salaries of non production employees, etc

Sensitivity analysis: Below is the sensitivity analysis for the actual output of rape for an enterprise budget in figure 6.

			Revenue						
			Decrease (-)			Actual	Increase (+)		
			30.0%	20.0%	10.0%	Price	10.0%	20.0%	30.0%
		Output	-3.85	-4.40	-4.95	5.50	6.05	6.60	7.15
			Revenue at different levels of output						
MINUS	30%	5,600.00	-	-	-	30,800.00	33,880.00	36,960.00	40,040.00
	20%	6,400.00	-	-	-	35,200.00	38,720.00	42,240.00	45,760.00
	10%	7,200.00	-	-	-	39,600.00	43,560.00	47,520.00	51,480.00
	Revenue	8,000.00	-	-	-	44,000.00	48,400.00	52,800.00	57,200.00
PLUS	10.0%	8,800.00	-	-	-	48,400.00	53,240.00	58,080.00	62,920.00
	20.0%	9,600.00	-	-	-	52,800.00	58,080.00	63,360.00	68,640.00
	30.0%	10,400.00	-	-	-	57,200.00	62,920.00	68,640.00	74,360.00

			Total Variable Costs (TVC)						
			Decrease (-)			Actual	Increase (+)		
			30.0%	20.0%	10.0%	cost	10.0%	20.0%	30.0%
			Total Variable costs at different levels of output						
		Output	-1.63	-1.87	-2.10	2.34	2.57	2.80	3.04
MINUS	30.0%	5,600.00	-9,153.53	10,461.17	11,768.82	13,076.47	14,384.11	15,691.76	16,999.41
	20.0%	6,400.00	-	-	-	14,944.53	16,438.99	17,933.44	19,427.89
	10.0%	7,200.00	-	-	-	16,812.60	18,493.86	20,175.12	21,856.38
	Total Cost	8,000.00	-	-	-	18,680.67	20,548.73	22,416.80	24,284.87
PLUS	10.0%	8,800.00	-	-	-	20,548.73	22,603.61	24,658.48	26,713.35
	20.0%	9,600.00	-	-	-	22,416.80	24,658.48	26,900.16	29,141.84
	30.0%	10,400.00	-	-	-	24,284.87	26,713.35	29,141.84	31,570.33

6. 5 Rape Enterprise Budget –North East District

Total costs of production;

Total costs of production for rape include planting material, fertilizers, agro chemicals, direct labour costs, other pre-harvest costs, harvest and distribution costs and other variable costs. Table 6; below indicate the total cost of production for rape amounted to BWP30, 696.

Table 6: Total production costs – North East District

	BWP/HA	% of total costs
Planting material	752.00	2%
Fertilizers	10,904.00	36%
Agrochemicals	7,600.00	25%
Labour costs	5,200.00	17%
Other pre-harvest costs*	3,000.00	10%
Harvest and distribution costs	2,640.00	9%
Other variable costs	600.00	2%
	30,696.00	100%

Distribution of production costs for rape production ; Figure 9 indicate that fertilizers make up the largest percentage of the total production costs at 36%, while planting material, agro chemicals, labour costs, other pre-harvest costs, harvest and distribution costs and other variable costs constitute 2%, 25%,17%,10%,9% and 2% of the total production costs respectively;

Figure 9: Distribution of production costs for Rape-North East District

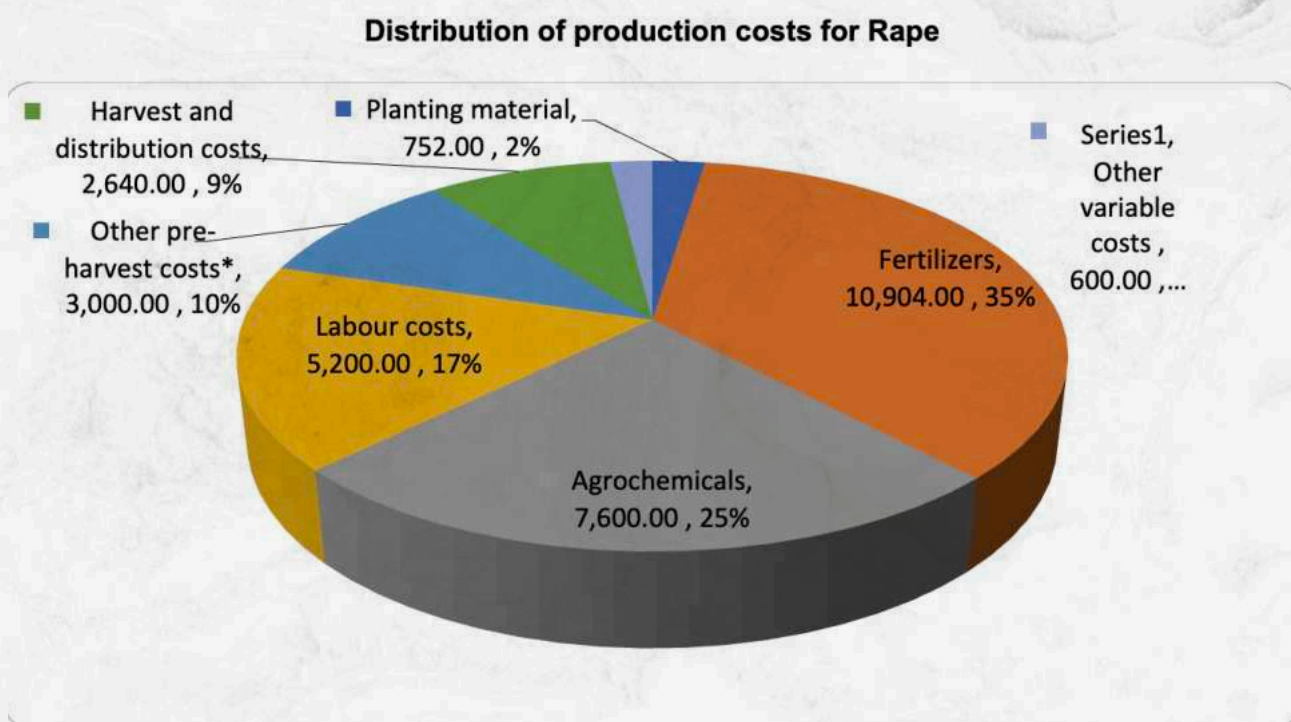


Figure 10: Detailed enterprise budget for Rape in North East District

	Rape enterprise BUDGET		North East District - Masunga				
Sr.no	Cropping Area-1 HA- Open Field					Per HA	Unit value /
	Cropping in months	1 month					
	Item description	Unit	Output in bundles	Output in bundles	Unit SP Per bundle	Value in BWP	Yield BWP / unit
		basis					
1	Revenue from produce	bundles	9,000.00	9,000.00	10.00	90,000.00	10.00
	Sold in bundles @P10 each						
2	VARIABLE COSTS (VC)		Quantity	Unit cost		Total cost	Cost / unit
2.1	PRODUCTION COSTS						
2.1.1	Planting material						
	Seeds	1 kg	4	188.00		752.00	0.08
2.1.2	Fertilizers						
i	2;3;2	50Kg	12	450.00		5,400.00	0.60
ii	Urea	50kg	8	288.00		2,304.00	0.26
iii	Nutriplex	25kg	4	800.00		3,200.00	0.36
2.1.3	Pesticides Insecticides						
i	Chlorpyrifos	5 litre	4	600.00		2,400.00	0.27
ii	SP 900- Methomax	1kg	4	700.00		2,800.00	0.31
iii	Avamaxycin	5 litres	4	600.00		2,400.00	0.27
2.1.4	Permanent farm workers						
	Direct Labour	Per month	2	600.00		1,200.00	0.13
2.1.5	Casual labour						
	Labour planting					-	-
	Labour weeding	3*2md	24	100.00		2,400.00	0.27
	Labour irrigation	4*1md	16	100.00		1,600.00	0.18
2.1.6	Other Pre Harvest costs						
	Transport of inputs to the farm	per trip	4	750.00		3,000.00	0.33
	Land preparation	Tractor hire				-	-
	TOTAL PRODUCTION COSTS					27,456.00	3.05
3	POST HAVERST COSTS (VC)						
3.1	Harvest and distribution costs						
	Casual labour	1md	8	100.00		800	0.09
	Packaging material	1 Kg	8	130.00		1,040	0.12
	Transport to the market	Per trip	1	800.00		800.00	0.09

3.2	Other variable costs						
	Electricity -borehole	<i>Per month</i>				-	-
	Fuel - Booster pump	<i>per month</i>	1	500.00		500.00	0.06
	Airtime	<i>Per month</i>	1	100.00		100.00	0.01
	TOTAL POST HAVERST COSTS					3,240.00	0.36
4	TOTAL VARIABLE COSTS (VC)					30,096.00	3.34
5	TOTAL FIXED COSTS (FC)					600.00	0.07
6	GROSS MARGIN					59,304.00	6.59
7	GROSS MARGIN %					66%	66%

Key assumptions

a. The yield is approximately 9,000 bundles in a cropping area of one (1) hectare (HA). The yield, has taken into account the normal and abnormal losses / wastage experienced during production.

b. It is not clear how many plants per HA for this production.

c. The gross revenue is calculated by multiplying the yield with the farm gate price. The farm gate price was established to be P10 per bundle. This is the price at which produce is sold to the market.

d. The gross margin is calculated by subtracting the variable costs from the revenue. The gross margin % is the gross margin expressed as percentage of revenue.

e. Net profit margin is calculated by subtracting the fixed costs from the gross margin.

f. The yields, revenue, variable costs and fixed costs vary from one farmer to the other in the district.

g. The yields are dependent on other variables such as climatic conditions in each ecological zone, farming practices, and the choice of inputs (fertilizers and agro chemicals) applied.

h. The gross profit margin for rape enterprise is approximately 66%, as indicated in the enterprise budget.

i. It is important to note that overheads or other operational costs are not included in the budget. These costs should be accounted for when compiling the whole farm budget. Examples of overheads include costs such as; depreciation of assets, interests / finance charges, bank charges, stationery, salaries of non production employees, etc.

Sensitivity analysis: Below is the sensitivity analysis for the actual output of rape for an enterprise budget in figure 10.

			Revenue						
			Decrease (-)			Actual	Increase (+)		
			30.0%	20.0%	10.0%	Price	10.0%	20.0%	30.0%
		Output	-7.00	-8.00	-9.00	10.00	11.00	12.00	13.00
			Revenue at different levels of output						
MINUS	30%	6,300.00	-	-	-56,700.00	63,000.00	69,300.00	75,600.00	81,900.00
	20%	7,200.00	-	-	-64,800.00	72,000.00	79,200.00	86,400.00	93,600.00
	10%	8,100.00	-	-	-72,900.00	81,000.00	89,100.00	97,200.00	105,300.00
	Revenue	9,000.00	-	-	-81,000.00	90,000.00	99,000.00	108,000.00	117,000.00
PLUS	10.0%	9,900.00	-	-	-89,100.00	99,000.00	108,900.00	118,800.00	128,700.00
	20.0%	10,800.00	-	-	-97,200.00	108,000.00	118,800.00	129,600.00	140,400.00
	30.0%	11,700.00	-	-	-105,300.00	117,000.00	128,700.00	140,400.00	152,100.00
			Total Variable Costs (TVC)						
			Decrease (-)			Actual	Increase (+)		
			30.0%	20.0%	10.0%	cost	10.0%	20.0%	30.0%
			Total Variable costs at different levels of output						
		Output	-2.39	-2.73	-3.07	3.41	3.75	4.09	4.43
MINUS	30.0%	6,300.00	-	-	-19,338.48	21,487.20	23,635.92	25,784.64	27,933.36
	20.0%	7,200.00	-	-	-22,101.12	24,556.80	27,012.48	29,468.16	31,923.84
	10.0%	8,100.00	-	-	-24,863.76	27,626.40	30,389.04	33,151.68	35,914.32
	Total Cost	9,000.00	-	-	-27,626.40	30,696.00	33,765.60	36,835.20	39,904.80
PLUS	10.0%	9,900.00	-	-	-30,389.04	33,765.60	37,142.16	40,518.72	43,895.28
	20.0%	10,800.00	-	-	-33,151.68	36,835.20	40,518.72	44,202.24	47,885.76
	30.0%	11,700.00	-	-	-35,914.32	39,904.80	43,895.28	47,885.76	51,876.24

6.6 Rape Enterprise Budget –South East District

Total costs of production;

Total costs of production for rape include planting material, fertilizers, agro chemicals, direct labour costs, other pre-harvest costs, harvest and distribution costs and other variable costs. Table 7; below indicate the total cost of production for rape amounted to P12, 930.

Table 7: Total production costs for rape –South East District

	BWP/HA	% of total costs
Planting material	1,200.00	9%
Fertilizers	3,050.00	24%
Agrochemicals	250.00	2%
Labour costs	4,540.00	35%
Other pre-harvest costs*	50.00	0%
Harvest and distribution costs	3,040.00	24%
Other variable costs	800.00	6%
	12,930.00	100%

Distribution of production costs for rape production; Figure 11 indicate that labour costs make up the largest percentage of the total production costs at 35%, while planting material, fertilizers, agro chemicals, other pre-harvest costs, harvest and distribution costs and other variable costs constitute 9%, 24%,2%,0%,24% and 6% of the total production costs respectively;

Figure 11: Distribution of production costs for Rape-South East District

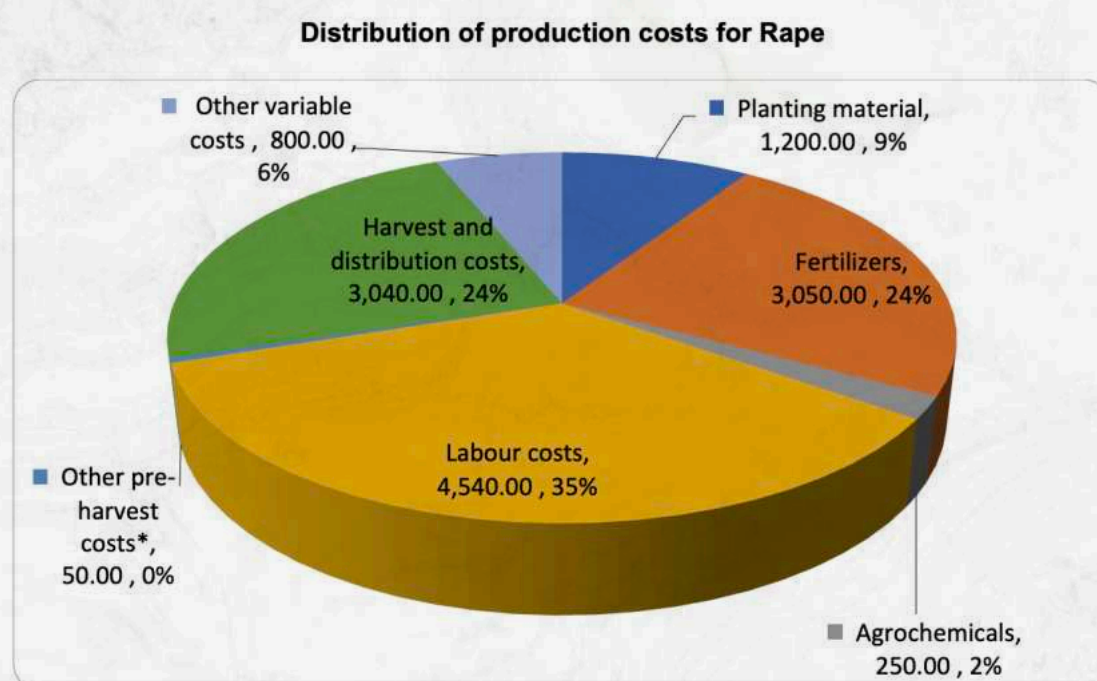


Figure 12: Detailed enterprise budget for Rape in South East District

			South East District - Ramotswa Taung				
	Rape enterprise BUDGET						
Sr.no	Cropping Area-1 HA- Open Field					Per HA	Unit value /
	Cropping in months	1 month					
	Item description	Unit	Output in bundles	Output in bundles	Unit SP Per bundle	Value in BWP	Yield BWP/ unit
		basis					
1	Revenue from produce	<i>bundles</i>	6,720.00	6,720.00	6.00	40,320.00	6.00
	Sold in bundles @P6 each						
2	VARIABLE COSTS (VC)		Quantity	Unit cost		Total cost	Cost / unit
2.1	PRODUCTION COSTS						
2.1.1	Planting material						
	Seeds	1 kg	4	300.00		1,200.00	0.18
2.1.2	Fertilizers						
i	Chicken Manure	1000 kg	2	800.00		1,600.00	0.24
ii	Multifeed	10 kg	4	300.00		1,200.00	0.18
iii		1 litre	1	250.00		250.00	0.04
2.1.3	Pesticides Insecticides						
i	Chlorpyrifos	1 litre	1	250.00		250.00	0.04
2.1.4	Permanent farm workers						
	Direct Labour	<i>Per month</i>	1	3,000.00		3,000.00	0.45
2.1.5	Casual labour						
	Labour planting	2*7md	14	60.00		840.00	0.13
	Labour weeding	2*7md	14	50.00		700.00	0.10
2.1.6	Other Pre Harvest costs						
	Transport of inputs to the farm	<i>per trip</i>	1	50.00		50.00	0.01
	Land preparation	<i>Tractor hire</i>				-	-
	TOTAL PRE-HARVEST COSTS					9,090.00	1.35
3	POST HAVERST COSTS (
	VC)						
3.1	Harvest and distribution costs						
	Labour harvesting	2*3md	1	2,240.00		2,240	0.33
	Packaging material - Box	<i>box</i>		130.00		-	-
	Transport to the market	<i>Per trip</i>	1	800.00		800.00	0.12

3.2	Other variable costs						
	Electricity -borehole	<i>Per month</i>				-	-
	Fuel - Pumping water	<i>per month</i>	1	600.00		600.00	0.09
	Airtime	<i>Per month</i>	1	200.00		200.00	0.03
	TOTAL POST HAVERST COSTS					3,840.00	0.57
4	TOTAL VARIABLE COSTS (VC)					12,130.00	1.81
5	OTHER VARIABLE COSTS					800.00	0.12
6	GROSS MARGIN					27,390.00	4.08
7	GROSS MARGIN %					68%	68%

Key assumptions

a. The yield is approximately 6,720 bundles in a cropping area of one (1) hectare (HA). The yield, has taken into account the normal and abnormal losses / wastage experienced during production.

b. It is not clear how many plants per HA for this production.

c. The gross revenue is calculated by multiplying the yield with the farm gate price. The farm gate price was established to be P6 per bundle. This is the price at which produce is sold to the market.

d. The gross margin is calculated by subtracting the variable costs from the revenue. The gross margin % is the gross margin expressed as percentage of revenue.

e. Net profit margin is calculated by subtracting the fixed costs from the gross margin.

f. The yields, revenue, variable costs and fixed costs vary from one farmer to the other in the district.

g. The yields are dependent on other variables such as climatic conditions in each ecological zone, farming practices, and the choice of inputs (fertilizers and agro chemicals) applied.

h. The gross profit margin for rape enterprise is approximately 68%, as indicated in the enterprise budget.

i. It is important to note that overheads or other operational costs are not included in the budget. These costs should be accounted for when compiling the whole farm budget. Examples of overheads include costs such as; depreciation of assets, interests / finance charges, bank charges, stationery, salaries of non production employees, etc

Sensitivity analysis: Below is the sensitivity analysis for the actual output of rape for an enterprise budget in figure 12.

			Revenue						
			Decrease (-)			Actual	Increase (+)		
			30.0%	20.0%	10.0%	Price	10.0%	20.0%	30.0%
		Output	-4.20	-4.80	-5.40	6.00	6.60	7.20	7.80
			Revenue at different levels of output						
MINUS	30%	4,704.00	-	-	-	28,224.00	31,046.40	33,868.80	36,691.20
	20%	5,376.00	-	-	-	32,256.00	35,481.60	38,707.20	41,932.80
	10%	6,048.00	-	-	-	36,288.00	39,916.80	43,545.60	47,174.40
	Revenue	6,720.00	-	-	-	40,320.00	44,352.00	48,384.00	52,416.00
PLUS	10.0%	7,392.00	-	-	-	44,352.00	48,787.20	53,222.40	57,657.60
	20.0%	8,064.00	-	-	-	48,384.00	53,222.40	58,060.80	62,899.20
	30.0%	8,736.00	-	-	-	52,416.00	57,657.60	62,899.20	68,140.80

			Total Variable Costs (TVC)						
			Decrease (-)			Actual	Increase (+)		
			30.0%	20.0%	10.0%	cost	10.0%	20.0%	30.0%
			Total Variable costs at different levels of output						
		Output	-1.35	-1.54	-1.73	1.92	2.12	2.31	2.50
MINUS	30.0%	4,704.00	-6,335.70	-7,240.80	-8,145.90	9,051.00	9,956.10	10,861.20	11,766.30
	20.0%	5,376.00	-7,240.80	-8,275.20	-9,309.60	10,344.00	11,378.40	12,412.80	13,447.20
	10.0%	6,048.00	-8,145.90	-9,309.60	10,473.30	11,637.00	12,800.70	13,964.40	15,128.10
	Total Cost	6,720.00	-9,051.00	10,344.00	11,637.00	12,930.00	14,223.00	15,516.00	16,809.00
PLUS	10.0%	7,392.00	-9,956.10	11,378.40	12,800.70	14,223.00	15,645.30	17,067.60	18,489.90
	20.0%	8,064.00	10,861.20	12,412.80	13,964.40	15,516.00	17,067.60	18,619.20	20,170.80
	30.0%	8,736.00	11,766.30	13,447.20	15,128.10	16,809.00	18,489.90	20,170.80	21,851.70

6.7 Rape Enterprise Budget –Boteti District

Total costs of production;

Total costs of production for rape include planting material, fertilizers, agro chemicals, direct labour costs, other pre-harvest costs, harvest and distribution costs and other variable costs. Table 8; below indicate the total cost of production for rape amounted to BWP23, 931.

Table 8: Total production costs for rape –Boteti District

	BWP/HA	% of total costs
Planting material	2,944.00	12%
Fertilizers	2,988.00	12%
Agrochemicals	8,774.00	37%
Labour costs	3,625.00	15%
Other pre-harvest costs*	500.00	2%
Harvest and distribution costs	3,500.00	15%
Other variable costs	1,600.00	7%
	23,931.00	100%

Distribution of production costs for rape production ; Figure 13 indicate that agro chemicals make up the largest percentage of the total production costs at 37%, while planting material, fertilizers, labour costs, other pre-harvest costs, harvest and distribution costs and other variable costs constitute 12%, 12%,15%,2%,15% and 7% of the total production costs respectively;

Figure 13: Distribution of production costs for Rape-Boteti District

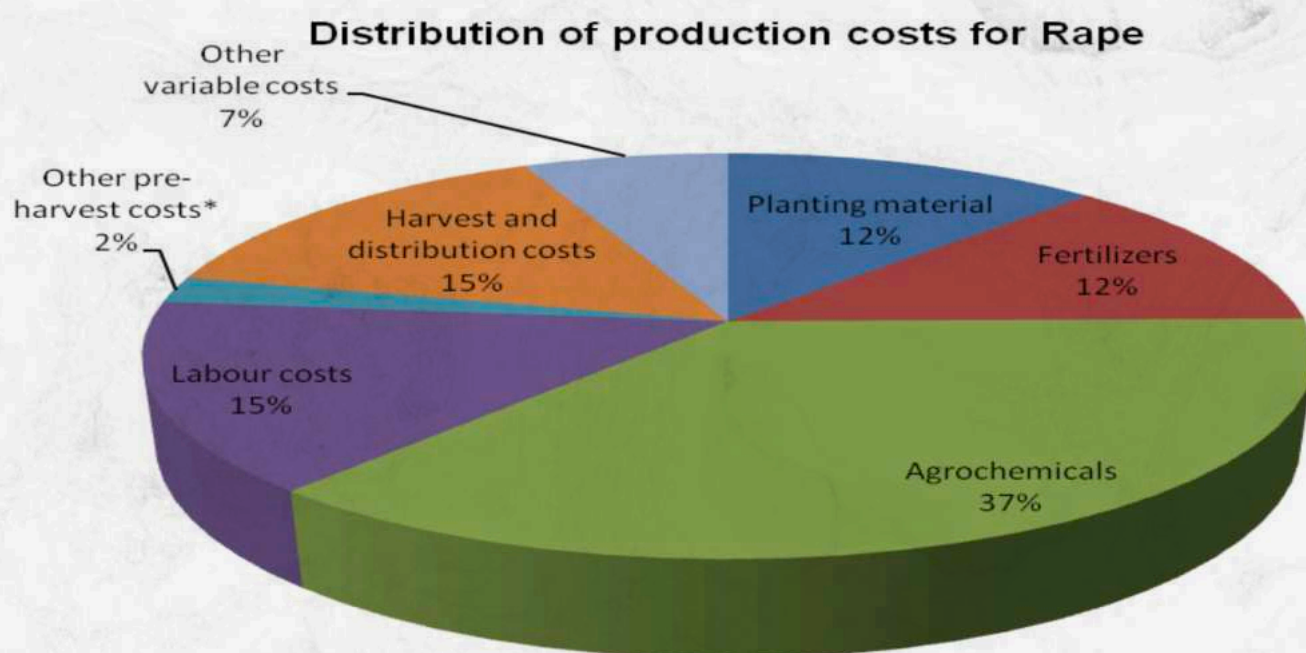


Figure 14: Detailed enterprise budget for Rape in Boteti District

Rape enterprise BUDGET		Boteti District - Zantete, Letlhakane					
Sr.no	Cropping Area-1 HA- Open Field					Per HA	Unit value /
	Cropping in months	1 month					
	Item description	Unit	Output in bundles	Output in bundles	Unit SP Per bundle	Value in BWP	Yield BWP / unit
1	Revenue from produce	bundles	10,000.00	10,000.00	5.00	50,000.00	5.00
	Sold in bundles @P5 each						
2	VARIABLE COSTS (VC)		Quantity	Unit cost		Total cost	Cost / unit
2.1	PRODUCTION COSTS						
2.1.1	Planting material						
	Seeds	1 kg	4	300.00		1,200.00	0.12
	Hydromix	kg	4	436.00		1,744.00	0.17
2.1.2	Fertilizers						
i	NPK (2:3:2)	50kg	2	600.00		1,200.00	0.12
ii	Easygrow Starter	50 Kg	2	306.00		612.00	0.06
iii	Growfast	1 litre	2	588.00		1,176.00	0.12
2.1.3	Herbicides						
i	Roundup	1 Litres	1	1,000.00		1,000.00	0.10
ii	Springbok	1 Litres	1	1,220.00		1,220.00	0.12
2.1.4	Pesticides Insecticides						
i	Warlock -19 2 EC	1 litre	2	685.00		1,370.00	0.14
ii	Cypermethrin	1 Litre	2	450.00		900.00	0.09
iii	Chlopyrifos	1 Litre	2	832.00		1,664.00	0.17
2.1.5	Fungicides						
i	Virikop	1 Kg	2	250.00		500.00	0.05
ii	Cartap	1kg	2	510.00		1,020.00	0.10
iii	Dithane M45	1kg	2	550.00		1,100.00	0.11
2.1.6	Permanent farm workers						
	Direct Labour	Per month	1	1,125.00		1,125.00	0.11
2.1.7	Casual labour						
	Labour planting	5*2md	10	50.00		500.00	0.05
	labour chemicals and fertilizer	5*2md	10	50.00		500.00	0.05
	Labour weeding	10*2md	20	50.00		1,000.00	0.10
	Labour irrigation Set up and management	5*2md	10	50.00		500.00	0.05
2.1.8	Other Pre Harvest costs						
	Transport of inputs to the farm	per trip	1	500.00		500.00	0.05
	Land preparation					-	-

	TOTAL PRE-HARVEST COSTS					18,831.00	1.88
3	POST HAVERST COSTS (VC)						
3.1	Harvest and distribution costs						
	Labour harvesting					-	-
	Packaging material	box	2	1,000.00		2,000	0.20
	Transport to the market	Per trip	1	1,500.00		1,500.00	0.15
3.2	Other variable costs						
	Electricity -borehole	Per month				-	-
	Fuel - Pumping water	per month	1	1,500.00		1,500.00	0.15
	Airtime	Per month	1	100.00		100.00	0.01
	TOTAL POST HAVERST COSTS					5,100.00	0.51
4	TOTAL VARIABLE COSTS (VC)					22,331.00	2.23
5	OTHER VARIABLE COSTS					1,600.00	0.16
6	GROSS MARGIN					26,069.00	2.61
7	GROSS MARGIN %					52%	52%

Key assumptions

a. The yield is approximately 10,000 bundles in a cropping area of one (1) hectare (HA). The yield, has taken into account the normal and abnormal losses / wastage experienced during production.

b. It is not clear how many plants per HA for this production.

c. The gross revenue is calculated by multiplying the yield with the farm gate price. The farm gate price was established to be P5 per bundle. This is the price at which produce is sold to the market.

d. The gross margin is calculated by subtracting the variable costs from the revenue. The gross margin % is the gross margin expressed as percentage of revenue.

e. Net profit margin is calculated by subtracting the fixed costs from the gross margin.

f. The yields, revenue, variable costs and fixed costs vary from one farmer to the other in the district.

g. The yields are dependent on other variables such as climatic conditions in each ecological zone, farming practices, and the choice of inputs (fertilizers and agro chemicals) applied.

h. The gross profit margin for rape enterprise is approximately 52%, as indicated in the enterprise budget.

i. It is important to note that overheads or other operational costs are not included in the budget. These costs should be accounted for when compiling the whole farm budget. Examples of overheads include costs such as; depreciation of assets, interests / finance charges, bank charges, stationery, salaries of non production employees, etc

Sensitivity analysis: Below is the sensitivity analysis for the actual output of rape for an enterprise budget in figure 14.

			Revenue						
			Decrease (-)			Actual	Increase (+)		
			30.0%	20.0%	10.0%	Price	10.0%	20.0%	30.0%
		Output	-3.50	-4.00	-4.50	5.00	5.50	6.00	6.50
			Revenue at different levels of output						
MINUS	30%	7,000.00	-	-	-	35,000.00	38,500.00	42,000.00	45,500.00
	20%	8,000.00	-	-	-	40,000.00	44,000.00	48,000.00	52,000.00
	10%	9,000.00	-	-	-	45,000.00	49,500.00	54,000.00	58,500.00
	Revenue	10,000.00	-	-	-	50,000.00	55,000.00	60,000.00	65,000.00
PLUS	10.0%	11,000.00	-	-	-	55,000.00	60,500.00	66,000.00	71,500.00
	20.0%	12,000.00	-	-	-	60,000.00	66,000.00	72,000.00	78,000.00
	30.0%	13,000.00	-	-	-	65,000.00	71,500.00	78,000.00	84,500.00

			Total Variable Costs (TVC)						
			Decrease (-)			Actual	Increase (+)		
			30.0%	20.0%	10.0%	cost	10.0%	20.0%	30.0%
Total Variable costs at different levels of output									
		Output	-1.68	-1.91	-2.15	2.39	2.63	2.87	3.11
MINUS			-	-	-				
	30.0%	7,000.00	11,726.19	13,401.36	15,076.53	16,751.70	18,426.87	20,102.04	21,777.21
	20.0%	8,000.00	13,401.36	15,315.84	17,230.32	19,144.80	21,059.28	22,973.76	24,888.24
	10.0%	9,000.00	15,076.53	17,230.32	19,384.11	21,537.90	23,691.69	25,845.48	27,999.27
	Total Cost	10,000.00	16,751.70	19,144.80	21,537.90	23,931.00	26,324.10	28,717.20	31,110.30
PLUS			-	-	-				
	10.0%	11,000.00	18,426.87	21,059.28	23,691.69	26,324.10	28,956.51	31,588.92	34,221.33
	20.0%	12,000.00	20,102.04	22,973.76	25,845.48	28,717.20	31,588.92	34,460.64	37,332.36
	30.0%	13,000.00	21,777.21	24,888.24	27,999.27	31,110.30	34,221.33	37,332.36	40,443.39

6. 8 Rape Enterprise Budget –Ngami District

Total costs of production;

Total costs of production for rape include planting material, fertilizers, agro chemicals, direct labour costs, other pre-harvest costs, harvest and distribution costs and other variable costs. **Table 9**; below indicate the total cost of production for rape amounted to BWP14, 900.

Table 9: Total production costs for rape –Ngami District

	BWP/HA	% of total costs
Planting material	680.00	5%
Fertilizers	6,700.00	45%
Agrochemicals	1,600.00	11%
Labour costs	4,000.00	27%
Other pre-harvest costs*	600.00	4%
Harvest and distribution costs	720.00	5%
Other variable costs	600.00	4%
	14,900.00	100%

Distribution of production costs for rape production ; Figure 15 indicate that fertilizers make up the largest percentage of the total production costs at 45%, while planting material, agro chemicals, labour costs, other pre-harvest costs, harvest and distribution costs and other variable costs constitute 5%, 11%,27%,4%,5% and 4% of the total production costs respectively;

Figure 15: Distribution of production costs for Rape-Ngami District

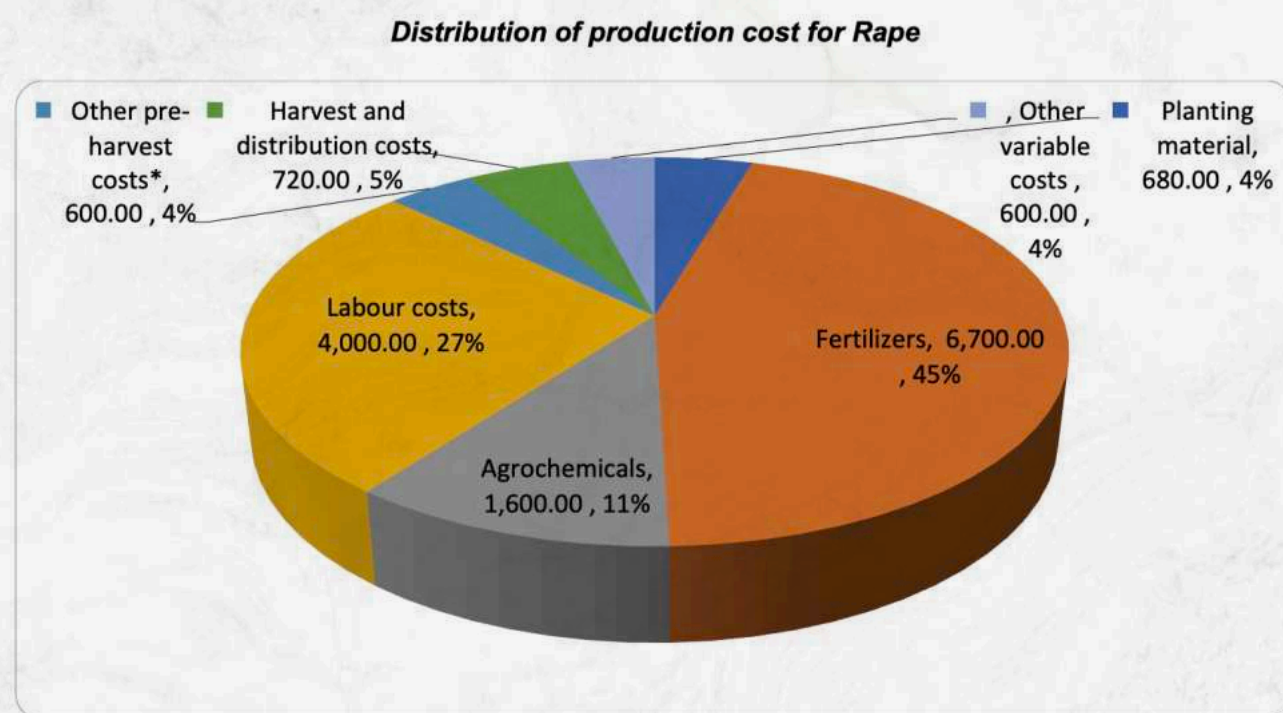


Figure 16: Detailed enterprise budget for Rape in Ngami District

Rape enterprise BUDGET		Ngami District - Chanoga Boseja					Unit value /
Sr.no	Cropping Area-1 HA- Open Field					Per HA	
	Cropping in months	1 month					
	Item description	Unit	Output in bundles	Output in bundles	Unit SP Per bundle	Value in BWP	Yield BWP / unit
1	Revenue from produce	basis bundles	1,000.00	1,000.00	10.00	10,000.00	10.00
2	VARIABLE COSTS (VC)		Quantity	Unit cost		Total cost	Cost / unit
2.1	PRODUCTION COSTS						
2.1.1	Planting material						
	Seeds 1 Kg	1 kg	4	170.00		680.00	0.68
2.1.2	Fertilizers						
i	Goat manure	1 tonne	1	100.00		100.00	0.10
ii	2:3:2	50kg	4	450.00		1,800.00	1.80
iii	Urea	50 Kg	6	800.00		4,800.00	4.80
2.1.3	Pesticides Insecticides						
i	Chlorpyrifos	1 litre	4	400.00		1,600.00	1.60
2.1.4	Permanent farm workers						
	Direct Labour	Per month	2	2,000.00		4,000.00	4.00
2.1.5	Other Pre Harvest costs						
	Transport of inputs to the farm	per trip	2	300.00		600.00	0.60
	Land preparation	Tractor hire				-	-
	TOTAL PRE-HARVEST COSTS					13,580.00	13.58
3	POST HAVERST COSTS (VC)						
3.1	Harvest and distribution costs						
	Casual labour	1md	2	100.00		200	0.20
	Packaging material - Rubber 160 per box	Box	3,200	0.10		320	0.32
	Transport to the market	Per trip	1	200.00		200.00	0.20
3.2	other variable costs						
	Electricity -borehole	Per month				-	-
	Fuel - Booster pump	per month	1	500.00		500.00	0.50
	Airtime	Per month	1	100.00		100.00	0.10
	TOTAL POST HAVERST COSTS					1,320.00	1.32
4	TOTAL VARIABLE COSTS (VC)					14,300.00	14.30
5 "	OTHER VARIABLE COSTS					600.00	0.60
6	LOSS					(4,900.00)	(4.90)

Key assumptions

- a. The yield is approximately 1,000 bundles in a cropping area of one (1) hectare (HA). The yield, has taken into account the normal and abnormal losses / wastage experienced during production.
- b. The farmer indicated that she suffered a huge loss as result of fire outbreak. This has impacted negatively on the yields, and resulted in a loss. The loss is reported to be P4,900.
- c. The gross revenue is calculated by multiplying the yield with the farm gate price. The farm gate price was established to be P10 per bundle. This is the price at which produce is sold to the market.
- d. The gross margin is calculated by subtracting the variable costs from the revenue. The gross margin % is the gross margin expressed as percentage of revenue.
- e. Net profit margin is calculated by subtracting the fixed costs from the gross margin.
- f. The yields, revenue, variable costs and fixed costs vary from one farmer to the other in the district.
- g. The yields are dependent on other variables such as climatic conditions in each ecological zone, farming practices, and the choice of inputs (fertilizers and agro chemicals) applied.
- h. It is important to note that overheads or other operational costs are not included in the budget. These costs should be accounted for when compiling the whole farm budget. Examples of overheads include costs such as; depreciation of assets, interests / finance charges, bank charges, stationery, salaries of non production employees, etc

7. Constraints to production of Rape

Table 10, indicate the constraints to production of the rape enterprise as shared by farmers interviewed for the enterprise budgets in the selected Districts.

Table 10: Constraints / challenges to production for the five selected crops in each budget District;

Name of crop	Constraints to production of Rape in the selected Districts
Rape	North East District <ul style="list-style-type: none"> ▪ Shortage of casual labour during harvest. This situation contributes to loss of the produce in the field.
	Chobe District <ul style="list-style-type: none"> ▪ Losses reported as a result of wild animals such as baboons and warthogs. The wild animals feed on the vegetables before harvest leading to low yields in the end. ▪ Attack by pests and diseases as there is inconsistency of supplies of agro chemicals.
	Kgatleng District <ul style="list-style-type: none"> ▪ The crop is mostly attacked by Pests and cutworms. ▪ Harsh weather conditions damage the crops.
	Central District <ul style="list-style-type: none"> ▪ Too much heat ▪ High incidences of pests
	North East District <ul style="list-style-type: none"> ▪ Shortage of labour
	South East District <ul style="list-style-type: none"> ▪ Heat stress ▪ Pests
	Boteti District <ul style="list-style-type: none"> ▪ High incidence of Diamond Black Moth.
	Ngami District <ul style="list-style-type: none"> ▪ Lack of knowledge about application of agro chemicals. ▪ Pests and diseases ▪ Wild animals , particularly elephants ▪ Unreliable labour ▪ Unfavorable weather conditions

ANNEXURE 1: Enterprise Budget Data collection tool

Name of respondent	
Farm Location	
District	
Name of crop / vegetable	
Months taken from planting to harvest	

A. Collect data on quantities sold for a 1 HA production and the unit selling price for the product;

	Item description (vegetable)	Unit	Output	Output	Unit SP
		basis	in Tonnes / heads/ bundles	in Kgs/ heads/ bundle	P/ Kg , head, bundles, etc
1.					

B. Collect data on cost of seeds, fertilizers, pesticides and labour for 1 HA production

2	VARIABLE COSTS (VC)	Basis	Quantity	Unit cost
2.1	PRODUCTION COSTS			
2.1.1	Planting material			
	Seed / seedlings			
2.1.2	Fertilizers			
i				
ii				
iii				
iv				
v				
2.1.3	Herbicides			
i				
ii				
iii				
iv				
2.1.4	Pesticides Insecticides			
i				
ii				
iii				
iv				
2.1.5	Fungicides			
i				

ii				
iii				
iv				
2.1.6	Permanent farm workers			
	Direct Labour	<i>man days</i>		
2.1.7	Casual labour			
	Labour planting	<i>man days</i>		
	Labour fertilization and chemicals	<i>man days</i>		
	Labour weeding	<i>man days</i>		
	Labour irrigation set up and management	<i>man days</i>		
3	Marketing and distribution costs			
	Transport to market	<i>Per trip / fuel cost</i>		
	Airtime used	<i>Per month</i>		
	Packaging materials used			
4	Other variable costs			
	Diesel for borehole engine (if any)			
	Transporting inputs to farm			
	Other costs_____list them			

Notes:

a. Enquire on the rate for casual labour, and the number of days / hours engaged at each stage of production.

C. Constraints to production

Ask the farmer on constraints to production, affecting the production and yields.
(Production related challenges only)

