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SECTION B: RESEARCH FINDINGS

CHAPTER 5
FARM EFFICIENCY IN NKOMAZI

5.1 Introduction

The question to why some managers in farming are successful has been of interest to decision makers, researchers and academics for decades.
These decisive questions have centred on the differences related to the perception of the managers and the relation between such perceptions and success in agricultural production.

Some preconditions to success as efficiency, managerial ability and risk management have been accepted as cornerstones of economic success or economic satisfaction.
It has been noticed also that better management and the resulting higher profits margins normally result in the gradual increase in farm size due to efficient combination of resources (Groenewald, 1992:Satorius von Bach and Van zyl, 1992).

In this chapter, an attempt was made to evaluate the Nkomazi farmer's capacity to perform successfully and economically by relating criteria such as agricultural and management practices, to variables such as age of farm operators, farm size, solvency, farming income as well as yield.

5.2 Yield

Yield is an indication of the physical efficiency and is defined as the average weight of the output (grain or fruit) as expressed per unit area (F.A.O 1997).
The knowledge of the yield is of utmost importance because it is considered as the main factor determining the profit, and is also a function of management and the level of adoption of recommended practices which means that the more yield in farming, the more adequate management and practices adoption and thus the higher the profit.

One of the most significant indications of the success of a grower is the productivity of his land expressed as the yield tonnage per hectare and per annum (FAO 1997). In the present study of sugar cane production, the yield is expressed in terms of cane tonnage per hectare and per farm.

The current sugar-cane production was determined based on two parameters namely :

- The average yield per farm
- The average yield per hectare

The average sugar-cane yield per farm in different schemes of Nkomazi is presented in Table 5.1.The finding in table 5.1 shows clearly that farm yield was considerably different between schemes. This is shown by the fact that in Malelane the yield /tons/farm ranged from as low as 190t in Nhlangu East scheme to as high as 778,40t in Buffelspruit scheme.

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While in Komatipoort, the yield per farm ranged from as low as 395 tons in Mbhunu C to as high as 1145,71 tons in the Walda scheme .a factor significantly influencing the farm yield was the farm size, r=0,53 P<0,01

Table 5.1 The average yield in tons per farm in the different schemes of Nkomazi

Code	Schemes*	Tons / farm
A KOMATIPOORT		
1	Figtree C	713.32
2	Figtree D	484
3	Lunghenlane/Shinyokane	494.24
4	Mbhunu B	1068
5	Mbhunu C	395
6	Mhangane	607
7	Mfufane	614
8	Madadeni	783
9	Mangeweni	508
10	Spoons 7	946
11	Spoons 8	1027
12	Sibange	859
13	Walda	1145.71
	AVERAGE	741.86
B MALELANE		
14	Boshfontein	679
15	Buffelspruit	778.40
16	Low's creek	719.10
17	Mbongozi	582.33
18	Nhlangu East	190.33
	AVERAGE	589.83

* No data available for two schemes (Fig tree A & Tonga) from Komatipoort

Table5.2. presents Average yield per hectare in Nkomazi during the year 2000.The average yield per hectare is reflective of the variations observed earlier in the average yield per farm.

The variation in yield per hectare is shown by the fact that in Mangweni scheme the yield /hectare was as low as 48,63t/ha while the highest yield /ha was 128,85t/ha recorded in the Fig tree D (Komatipoort). On the contrary, in Malelane the lowest yield t/ha was recorded in the Low's Creek scheme and the highest 118/ha in Mbongozi.

As far as the average yields per hectare are concerned, the variations are similar, although the differences between the two districts of Komatipoort and Malelane are not as big (Table 5.2). As was the case with the average yield per farm, the average

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yield per hectare was expected to be a result of different levels of management skills and environmental factors such as soil types and irrigation efficiency.

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Table 5.2 Presents the average yield per hectare

Code	Schemes	Yield per hectare
A KOMATIPOORT		
1	Fig tree C	93.65
2	Fig tree D	128.85
3	Lungendlane/Shinyokane	71.73
4	Mbhunu B	82.14
5	Mbhunu C	70.33
6	Mhangane	113.03
7	Mfufane	117.12
8	Madadeni	113.34
9	Mangeweni	48.63
10	Spoons 7	107.94
11	Spoons 8	116.70
12	Sibange	105.58
13	Walda	109.11
	AVERAGE	98.33
B MALELANE		
14	Boshfontein	68.25
15	Buffelspruit	97.00
16	Low's creek	64.40
17	Mbongozi	118.29
18	Nhlangu East	93.13
	AVERAGE	88.21

*No available data for two schemes from Komatipoort (Figtree A and Tonga)

5.3 Farming income

The farming income in Nkomazi during the year 2000 was determined based on two following parameters:

- The gross farming income per hectare
- The net farming income per hectare

Gross farming income is defined as the difference between production sales and the cost of goods sold, it consists of operating expenses plus profits and it includes non–cash as well as cash income (Carter et al 1997).

Data in Table 5.3.summarises the average gross farming income per hectare in different schemes of Nkomazi region.
From Table 5.3,the average gross farming income per hectare was R12 019,43 in Malelane and R13 392,12 in Komatipoort. Between the irrigation schemes however, both in Komatipoort and Malelane the average gross farming income per hectare varied tremendously, the lowest gross farming income per hectare was R6 625,93 in

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Malelane while in Fig tree D it was almost three times as high as R 17 570.This variation may be partially explained by the difference in farm size ,which was positively correlated with the gross farming income $r = 0.16$ $P < 0.05$

Table 5.3 The average gross farming income per hectare in the different schemes of Nkomazi

Code Schemes	Gross farming income/ Ha in Rand	Gross farming income /ha in Rand
A KOMATIPOORT		
1	Fig tree C	12.684,52
2	Fig tree D	17.560
3	Lungedlane/Shinyokane	9.773,55
4	Mbhunu B	11.192,17
5	Mbhunu C	9,585,97
6	Mhangane	15.405,50
7	Mfufane	15.962,32
8	Madadeni	15.448,50
9	Mangeweni	6.625,93
10	Spoons 7	14.708,24
11	Spoons 8	15.902,95
12	Sibange	14.382,03
13	Walda	14.865,71
	AVERAGE	R 13.392,16
B MALELANE		
14	Boshfontein	9.301,98
15	Buffelspruit	13.215,56
16	Low's creek	8.770
17	Mbongozi	16.119,59
18	Nhlangu East	12.690,05
	AVERAGE	12.019,43

No available data for Fig tree A and Tonga (schemes from Komatipoort area)

5.4 Net farming income / hectare

The net farming income is the gross farming income less variable expenditure (excluding the remuneration capital, like interest and rent).
The net farming income is therefore that amount remaining as remuneration for the management of a farming business project (Louw, 1981,p 82).

Table 5.4. Summarises the mean of the net farming income in the different irrigation schemes in Nkomazi.

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The finding in this Table reveals significant differences between Komatipoort (R5 769,06 Nfi/ha)and Malelane(R4 778,4NFI/ha).The difference in net farming income was approximately R 990,60 and can be probably attributed to higher yield per farm, higher average yield per hectare and to the higher gross farming income in Komatipoort. More importantly ,these variation could be related to the farm size ,which was found positively correlated with the net farming income r =0.16 at P<0.05)

Table 5.4 How the net farming income varied between different schemes in Nkomazi

Code	Schemes	Net farming income per hectare in Rand
A KOMATIPOORT		
1	Fig tree C	4.268
2	Fig tree D	5.909
3	Lungendlane/Shinyokane	9728
4	Mbhunu B	3766
5	Mbhunu C	3225
6	Mhangane	5.183.67
7	Mfufane	5371
8	Madadeni	5198
9	Mangeweni	2.229
10	Spoons 7	13.329
11	Spoons 8	6 946.06
12	Sibange	4 839.05
13	Walda	5 001.79
	AVERAGE	5.769.06
B MALELANE		
14	Boshfontein	3129.78
15	Buffelspruit	8120
16	Low's creek	2950
17	Mbongozi	5423.67
18	Nhlangu East	4269.75
	AVERAGE	4778.4

*No available data for two schemes in Komatipoort (Fig tree A and Tonga)

As indicated in Table 5.4 the farm size was positively correlated with the net farming income per hectare. The same observation applied on the overall average net farming income in the two districts of Komatipoort and Malelane where substantial differences are found among the scheme while between districts these differences are not as big as shown in Table 5.5

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Table 5.5 Average net farming income in Rand per scheme /Average farm size

Code	Scheme	Average farm size	Total average net farming income/ average farm size	Overall average Net farming income /ha /scheme in Rand
A KOMATIPOORT				
1	Fig tree C	7.8	33279.55	4 266,60
2	Fig tree D	4.5	26586,9	5 908,2
3	Lungendlane /Shinyokane	15.6	151756,8	9 728
4	Mbhunu B	6.1	22 972,6	3 766
5	Mbhunu C	5.9	19 027,5	3 229
6	Mhangane	7.0	36 281	5 183
7	Mfufane	6.3	33 837,3	5 371
8	Madadeni	7.5	38 985	5 198
9	Mangeweni	12.3	27 416,7	2 229
10	Spoons 7	9.0	119 961	13 329
11	Spoons 8	7.7	53 507,88	6 949,07
12	Sibange	7.5	36 292,5	4 839
13	Walda	9.7	48 519,5	5 002,01
	AVERAGE	8.2	49 878.78	5 769.06
B MALELANE				
14	Boshfontein	10.0	31 300	3 130
15	Buffelspruit	7.1	57 652	8 120
16	Low's creek	8.4	24 788	2 950
17	Mbongozi	6.7	36340,8	5 424
18	Nhlangu East	2.1	8 967	4270
	AVERAGE	6.8	31 809,56	3 681,61

*No available data for Figtree A and Tonga schemes from Komatipoort

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CHAPTER 6
SOLVENCY OF FARMERS IN NKOMAZI

6.1 Introduction

Solvency indicates the extent to which assets exceed liabilities and thus the ability of the farm to fulfil all its liabilities in the event of a possible cessation of its activities (Louw, 1981, p30). Given the available data in Nkomazi during the year 2000, the solvency of farmers was measured only by means of the Net capital ratio (Current ratio), which is the ratio between total assets and total liabilities. It indicates whether the outstanding liabilities will be met if all the assets are sold and most importantly, the Net capital ratio is used to judge a farm's short - term capacity to meet its financial responsibilities.
This ratio should be greater than 1 as a figure of less than one implies bankruptcy in the case of liquidation.

The ratio is defined as follows:

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

The current solvency among different schemes in Nkomazi during the year 2000 is presented in the following Table 6.1.
According to the data summarized in Table 6.1, one can conclude that no very important margin was found between Komatipoort and Malelane as far as the solvency was concerned, the net capital ratio that determines the solvency position of farmers in Nkomazi ranged from as low as 1.04 to as high as 1.27.On the contrary however, tremendous differences of the solvency ratio were found among schemes.

Generally a ratio of more than 2:1 is accepted as safe (Louw.1981), and based on the correct valuation of the assets of farmers in Nkomazi in 2000, 3 following schemes (Fig tree C, Madadeni in Komatipoort, and Low's creek in Malelane, have shown a secure solvency ratio, while the majority of schemes in Nkomazi region did not present a safe solvency position, as a consequence were not in position to offer a security for the claims of short term creditors.
The difference in solvency ratio between Komatipoort and Malelane was very significant although these differences were more important within schemes than between districts. Obviously, there are good reasons to that for example the average yield, total income per hectare, perhaps the most important factor was the willingness to take a moderate risk which characterised the 3 schemes that had a financially secure solvency as shown by the following Chi-square equation:

X^2= DF 6,Value 79,39 at $P < 0.001$

Taking moderate risk had significant positive relationship with the solvency ratio. Furthermore, no significant and positive correlation was found at 5 or 10% level between solvency of farmers in Nkomazi and yield per farm and per hectare, which is

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not surprising given the poor farming income figure observed earlier in the region (Table 6.2).

Table 6.1 Solvency of farmers in different schemes

Code	Schemes	Current assets	Currents liabilities	Solvency Ratio
A KOMATIPOORT				
1	Fig tree A	53.000	28000	1.89
2	Fig tree C	62016.75	23546	2.66
3	Fig tree D	79320	120.200	0.65
4	Madadeni	156.650	42.650	3.67
5	Mhangane	13900	57000	0.2
6	Mbhunu B	68.666.66	55704.16	1.2
7	Mbhunu C	51.000	57000	0.89
8	Mfufane	48.666.66	53.200.00	0.91
9	Sibange	118.868.57	88.256	1.34
10	Spoons 7	139028.57	76238.57	1.8
11	Spoons 8	83791.66	74325	1.12
12	Tonga	19.466.66	14100	1.38
13	Walda	28.717.74	32325	0.99
	AVERAGE	71.007.17	55.503.51	1.27
B MALELANE				
14	Boshfontein	75000	104166	0.72
15	Low's creek	179.000	31.666	5.65
16	Nhlangu East	267	100840	0.002
17	Mbongozi	39.866.66	44.400	0.53
	AVERAGE	73.533.41	70.268	1.04

**No available data for 3 schemes: 2 from Komatipoort (Mhangeweni +Shinyokane) and 1 from Malelane (Buffelspruit)

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Table 6.2 Correlation of the Solvency with the yield in Nkomazi

Solvency	Average yield/farm	Average yield /ha
	0,04124	0,00419
	0,6883	0,9675
	97	97

* No available data for 42 farmers

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CHAPTER 7
PRACTICE ADOPTION IN NKOMAZI

7.1 Introduction

The proficiency in farm management and a rapid rate of adoption of recommended practices are highly commendable and undoubtedly powerful indicators of progressive personality. It may be deducted that the good farmer exhibits a brand of the managerial ability which recognises the importance of science and technological change for the continued development of the enterprise and secondly incorporates the inherent skill and rationality to apply with discretion and integrate successfully those practices which will increase the level of agricultural productivity on a productivity on a permanent scientific basics (Morris, 1967).
In this chapter, the adoption of the recommended agricultural practices will be assessed among irrigation farmers in Nkomazi, given the fact that an adequate adoption of agricultural practices has a positive impact in determining the yield and consequently the farming income.

7.2 Current Level of adoption of Recommended Agricultural practices

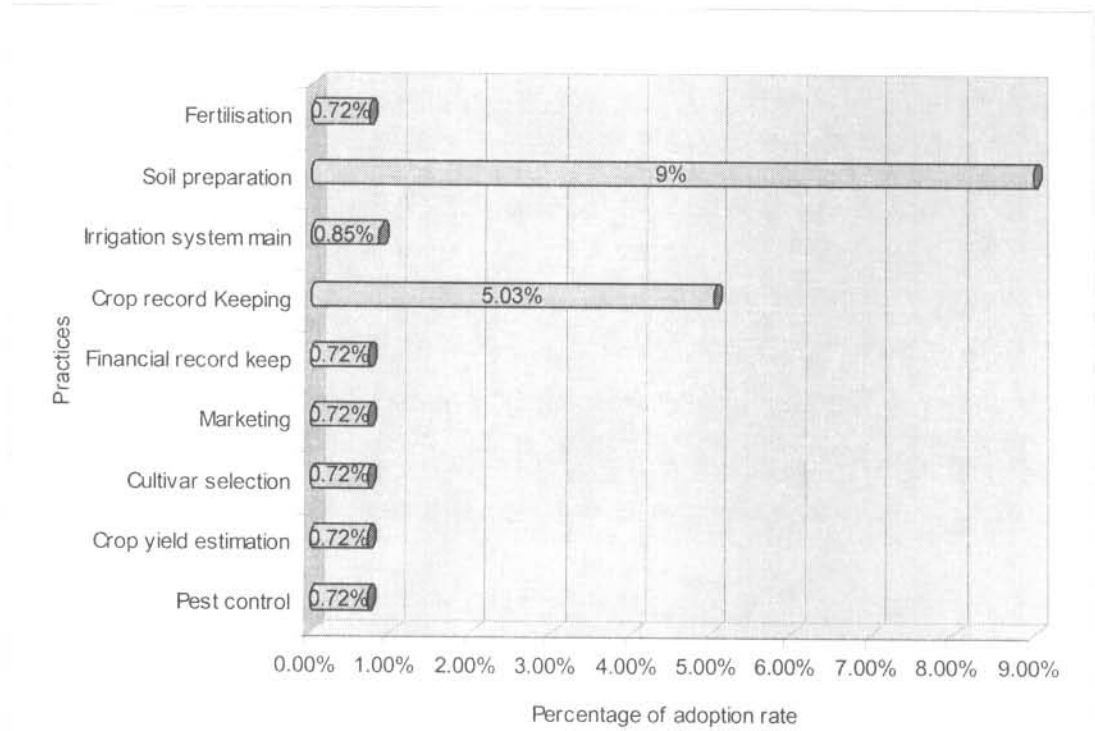

Figure 7.1 Adoption of recommended Agricultural practices in Nkomazi

Figure 7.1 presents the adoption rate of the recommended agricultural practices. The overall view is that the rate of adoption of recommended practices during the year 2000 was found very low, it ranged from 0,72% for the adoption of the following practices: pest control, scouting for diseases, cultivars selection, marketing, financial

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record keeping to as high as 5 to 9% for the crop record keeping and soil preparation. Which means that out of 18 selected agricultural practices in sugar cane farming, 9 practices only were found to be known as well as adopted even though with a low rate by the Nkomazi farmers.

It appears from the figure 7.1 that there was a poor adoption of recommended practices in sugar cane farming. In the following Table is presented the correlation of the current adoption of the agricultural practices with the yield as well the farming income in Nkomazi during the year 2000.

Because of the appalling adoption rate observed in the figure 7.1, the significant correlations of the current level of practices adoption were found between the fertilisation and net farming income per hectare r= 0.46 at P<0.01% as well as the marketing with the net farming income r=0.19at P<0.01%.Soil preparation r=0.1with the yield /farm P<0.01%,pest control r=0.2 with the yield/farm at p<0.05%,cultivars selection r=0.2 with the yield/farm at P<0.05%, crop yield estimation r=0.2 with the yield /farm at P<0.01,irrigation system maintenance r=0.2 with yield /farm at P<0.05 and r=0.3 with the net farming income at P<0.01

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Table 7.1 Correlation of the current adoption of recommended practices with Farming income (Yield and farming income) N=118

Code	Agricultural Practices	Yield /tons/farm	Yield /tons/ ha	Gross farming income/ ha	Net farming Income / ha
1	Soil preparation	0.11	0.12	0.12	-0.03
2	Taking soil Preparation	0.10	0.03	0.03	0.01
3	Fertilisation	0.08	0.09	0.06	0.46**
4	Scouting for pest	0.02	0.14	0.14	-0.01
5	Pest control	0.11	0.03	0.003	-0.11
6	Scouting for diseases	0.08	-0.11	0.11	0.12
7	Disease control	0.07	-0.05	-0.05	0.08
8	Irrigation scheduling	0.01	-0.01	-0.01	0.06
9	Planting	0.06	-0.03	-0.03	-0.03
10	Cultivars selection	-0.06	-0.04	-0.04	-0.04
11	Crop yield estimation	0.00	-0.10	-0.10	-0.11
12	Harvesting	0.10	-0.04	-0.04	-0.04
13	Marketing	0.10	0.09	0.09	0.19**
14	Financial record keeping	0.05	-0.07	-0.07	0.14
15	Crop record keeping	-0.02	0.11	-0.11	0.00
16	Pump maintenance	0.00	0.01	-0.11	0.00
17	Irrigation system maintenance	0.03	0.03	0.03	0.00
18	Weed control	0.03	0.08	-0.08	-0.12

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7.3 Summary

In conclusion, the assessment of the current rate of adoption of recommended practices in Nkomazi has revealed that the overall rate of adoption was less than 10% for the majority of recommended practices in different schemes of Nkomazi.
The reason has to do with the personal skills of farmers, coupled with problems such as access to credit, managerial issues as well as the willingness to risk taking.

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CHAPTER 8
BEHAVIOUR DETERMINANTS: THE NEEDS AND PERCEPTIONS OF FARMERS IN NKOMAZI

8.1 Introduction

Adoption behaviour is a function and direct result of intervening variables such as needs, perceptions and knowledge. These variables in turn are influenced by independent personal and environmental variables whose indirect effect becomes manifested in behaviour via the mediating variables.
The knowledge of the behaviour determinants or mediating variables is very important since it is the largest contributor towards farming success. Duvel (1975) found that the independent variables surface through the intervening variables in order to determine the farming success. Subsequent studies by Botha and Lombard (1995) support the same finding in the way that the knowledge, perception as well as aspirations are the factors to be addressed if desired change has to be initiated.

In this chapter, the impact of the mediating variables on the overall farming success will be assessed based on the perception, needs and knowledge of Nkomazi farmers during the year 2000.

8.2 Knowledge of recommended agricultural practices

A definite constraint to the success of small-scale sugar cane production in Nkomazi is the lack of knowledge of certain key agricultural practices.
Considering the importance of knowledge in farming, the Nkomazi farmer's knowledge of recommended agricultural practices was assessed based on the following parameters:

- The perceived previous level of knowledge of recommended agricultural practices before joining the current project in Nkomazi
- The need to undergo more training in the future

8.3 Assessment of the Nkomazi farmer's level of previous knowledge of recommended agricultural practices

Figure 8.1 Shows that the overall level of the previous knowledge of recommended practices in Nkomazi was found very low.
The previous knowledge level of practices ranged from as low as 11.51% for (planting and irrigation scheduling) to as high as 23.74% (for the marketing and harvesting). No data was obtained regarding the practices of weed control, irrigation system maintenance and pump maintenance.

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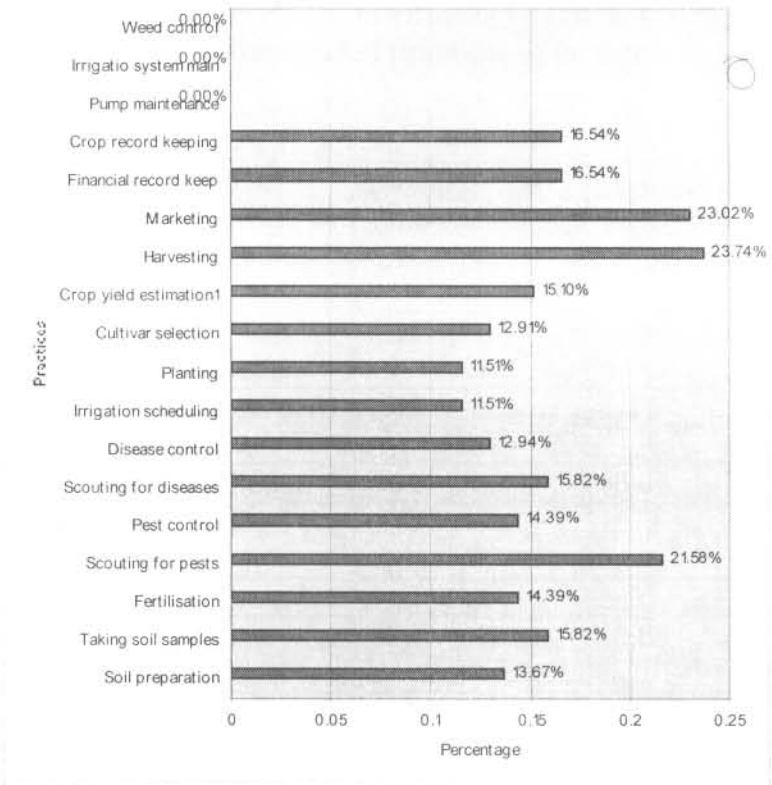

Figure 8.1 Assessment of the previous knowledge of recommended agricultural practices in Nkomazi 2000

While the level of previous knowledge of the following recommended agricultural practices were not formally expressed: weed control, irrigation system maintenance and pump maintenance.

From the findings in Figure 8.1 it appears that most farmers in the region did not get much exposure to the modern farming prior to the current sugar cane project which could have provided them the better understanding of commercial farming.
The more specific contribution or the value of the previous knowledge is analysed in Table 8.1 and related to some physical and economic variables that are indicators of the overall efficiency in sugar cane farming.

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Table 8.1 Correlation of efficiency variables with previous knowledge of recommended practices of farmers

N=118♦

Code	Previous knowledge of practices	Average yield/tons/farm	Average yield/tons/ha	Gross farming income/ha	Net farming income /Ha
1	Soil preparation	0.23	-0.003	-0.003	-0.11
2	Taking soils samples	0.18	0.11	-0.11	-0.12
3	Fertilisation	0.11	-0.07	-0.07	-0.14
4	Scouting for pest	0.13	0.02	0.02	0.02
5	Pest control	0.31**	0.03	0.03	-0. 6*
6	Scouting for disease	-0.07	-0.08	-0.08	0.81*
7	Diseases control	0.13	0.10	0.10	0.06
8	Irrigation scheduling	0.12**	0.01	0.01	-0.07
9	Planting	0.15	0.01	0.01	-0.09
10	Cultivars selection	0.25**	0.01	0.01	-0.09
11	Crop yield estimation	0.24**	0.0008	0.0008	-0.12
12	Harvesting	0.20**	0.0018	0.0017	-0.02
13	Marketing	0.21**	-0.01	-0.01	-0.07
14	Financial record keeping	0.03	-0.007	-0.007	0.18*
15	Crop record keeping	0.10	-0.05	-0.05	-0.15
16	Irrigation system maintenance	0.19	0.07	0.07	0.39*
17	Weed control	0.08	-0.03	-0.03	-0.01

*= Significantly correlated at 1 % and **= significantly correlated at 5%
♦= 21 data missing
No available data for the practice: pump maintenance

From the findings in Table 8.1,it It appears that the previous knowledge of the pest control was the only knowledge aspect found to be significantly correlated with the

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efficiency both yield/farm r=0.31 at P< 0.05 and with the net farming income /ha r=-0.6 at P< 0.01.
Significant correlations were found with the yield per farm in the case of irrigation scheduling r=0.12 at P<0.05, cultivars selection r=0.25 at P < 0.05, crop yield estimation r=0.24 at P<0.05, harvesting r= 0,20 at P< 0.05, marketing r=0.21 at P< 0.05. Also, significant in the case of the net farming income per hectare were the previous knowledge of irrigation system maintenance r= 0.39 at P< 0.01, scouting for diseases r= 0.81 at P< 0,01 and financial record keeping r= 0.18 at P< 0.01.
While the previous knowledge of the following practices:
Irrigation scheduling, cultivars selection, crop yield estimation, harvesting and marketing was found only significantly correlated with the yield/ tons / farm at (P<5%).
In the meantime, previous knowledge of irrigation system maintenance, financial record keeping and scouting for disease was found only significantly correlated with the net farming income per hectare (P<5%).

In conclusion, there is strong evidence that the previous knowledge of recommended agricultural practices was found positively linked to the efficiency (both physical and economic) in Nkomazi.
Thus previous knowledge has a significant contribution to the efficiency of sugar – cane production through its correlation with some key practices, which means that previous knowledge provides farmers with personal enrichment, commitment and confidence in decision making.

8.4 Need for Training in Nkomazi

The need for more training is assumed to be an important precondition as it can reflect a willingness to change or improve the production efficiency. This is particularly meaningful in the light of the general low level of current adoption rate of practices (Figure 7.1) as well as the low level of the current previous knowledge (figure 8.1) and that illustrates a necessity for further investment in human capital particularly in addressing the issue of farming knowledge and skills.

Figure 8.2. Summarizes the level or the need for more training in agricultural practices expressed by the farmers in Nkomazi. According to the findings in this Figure, the overall need for more training ranged from as low as 7.91% to as high as 28.06%. Most farmers have shown a willingness to have more training since it increases knowledge and personal enrichment, motivation, commitment as well as confidence in the management.
The more specific contribution of the willingness to undergo more training is further analysed in Table 8.2 through its correlation or relationship with the success criteria.

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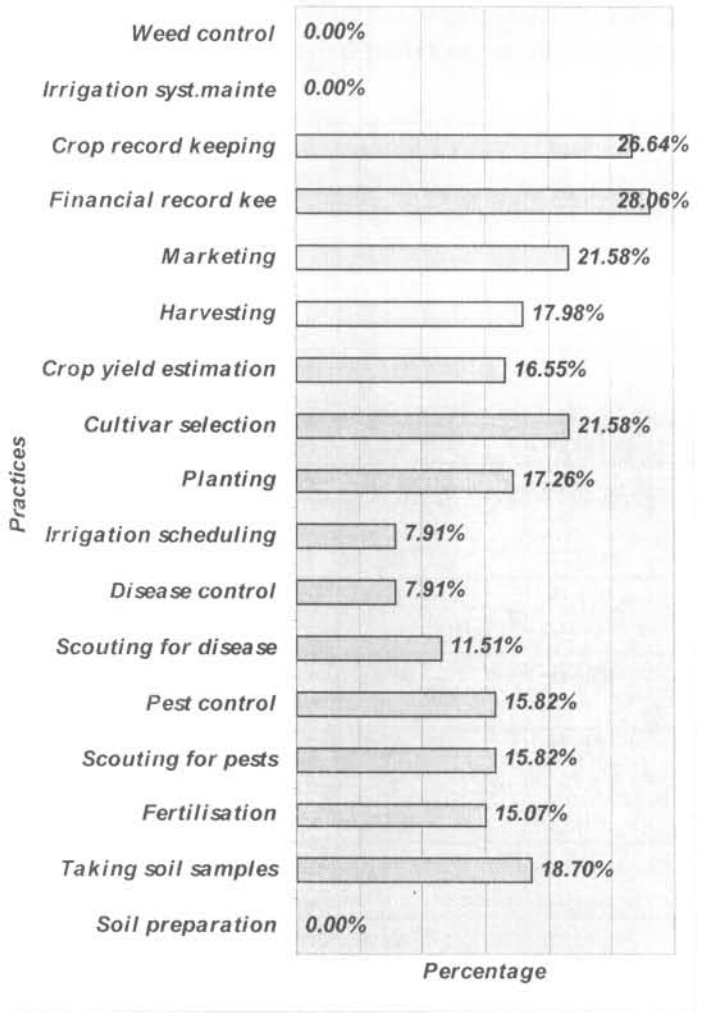

Figure 8.2 Training needs as expressed by Nkomazi farmers 2000

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Table 8.2 Correlation of the willingness to undergo more training in recommended practices with efficiency

N= 118♦

Code	Willingness to undergo more training in	Yield / tons/ farm	Yield/tons / hectare	Gross farming income / ha in Rand	Net farming income/ha in Rand
1	Soil preparation	0.22**	-0.02	-0.02	-0.012
2	Taking soil samples	0.10	-0.03	-0.03	-0.16**
3	Fertilisation	0.21**	-0.03	0.03**	0.12
4	Scouting for pests	0.22**	0.01	-0.01	-0.06
5	Pest control	0.26**	-0.001	-0.001	0.10
6	Scouting for diseases	0.01	-0.13	0.13	-0.13
7	Disease control	0.09	-0.08	-0.08	-0.08
8	Irrigation scheduling	0.20	-0.03	-0.03	-0.11
9	Planting	0.006	-0.03	-0.03	-0.14
10	Cultivars selection	0.17	0.00	0.00	-0.09
11	Crop yield estimation	0.18**	0.03	0.03	0.06
12	Harvesting	0.019	-0.05	-0.05	0.25**
13	Marketing	0.07	-0.12	0.12	0.23**
14	Financial record keeping	-0.13	0.14	-0.14	-0.25**
15	Crop record keeping	-0.12	0.22**	-0.22**	0.27**
16	Pump maintenance	-0.04	-0.16**	-0.15**	-0.11
17	Irrigation system maintenance	0.07	-0.03	0.03	0.01
18	Weed control	-0.07	0.10	0.13	0.02

** = Significantly correlated at $P < 0.001$

♦= 21 data missing

Significant correlations were found in the case of the willingness to undergo more training for the soil preparation with yield/farm r= 0,22 at $P<0.05$, Taking soil

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samples with NFI/ha r= 0.16 at P< 0,05, fertilisation with yield /farm r= 0,21 at P< 0.05 and gross farming income/ha r=0,03 at P<0,05, Scouting for pests with yield/farm r= 0,22 at P< 0.05,pest control with yield/farm r= 0,26 at P < 0,05,irrigation scheduling with yield /farm r= 0,20 at P< 0,05, cultivars selection with yield /farm r= 0,17 at P<0.05, crop yield estimation with yield /farm r=0.18 at P<0,05 , harvesting with net farming income r= -0.25 at P<0.05 , crop record keeping with yield /ha r= 0.22 at P< 0,05, gross farming r= -0.22 at P<0,05 and NFI r=-0.27 at P<0.05, finally the pump maintenance with yield /ha r= -0,16 and gross farming income r=-0.15 at P<0.05.

** Training need concerning Weed control and Irrigation system maintenance was not expressed

8.5 Willingness to take Risk in Nkomazi

By its nature, farming has considerable uncertainty and risk associated with. South African agriculture is inherently more risky than that of other countries because of low average rainfall and the wide variability both between and within seasons in most parts of the country. In addition to risk associated with drought, farmers are confronted also with a range of other hazards including hail storms, fires, pest and diseases (Green paper on agriculture, 1988). In the following Table (8.3) farmer's willingness to take risk is summarised.

Table 8.3 Frequency distribution of respondents according to their willingness to take risk and borrow at 18.5% interest rate in Nkomazi

N=139

Code	Risk category	Frequency	Percent
1	No comment	9	6
2	Low risk category borrowing less than R20 000 at 18,5%	65	46,76
3	Medium risk borrow up to R 60 000 at 18,5%	57	41,0
4	High risk category, borrow up to R 250 000 at 18,5%	8	5,8
	Total	139	100%

According to the data presented in Table 8.3, most farmers in Nkomazi were found willing to take risk for their farming activities. However, few farmers were willing to take high risk. While the remaining farmers, were divided with 41% for moderate risk 46% of farmers were prepared to take a lower risk .

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8.5.1 The relationship between Risk taking and Practices adoption

In the following Table the willingness of risk taking was assessed in order to determine which risk category was more suited or more positively related to practices adoption and thus to the efficiency.

Table 8.4 Correlation of Practices adoption and risk taking in Nkomazi

N=118

Practices	Low risk category borrow up to R 20 000	Medium risk borrow up to R 60 000	High risk category borrow up to R 250 000
Soil preparation	0.01	0.84**	0.07
Taking soil samples	-0.05	0.84**	0.03
Scouting for pests	-0.08	0.78**	0.06
Pest control	-0.01	0,75**	0.06
Scouting for diseases	0.05	0.80**	0.05
Disease control	0.02	0.03	0.08
Irrigation scheduling	0.05	0.01	0.01
Planting	0.07	0.53**	0.04
Cultivars selection	0.02	0.76**	0.03
Crop yield estimation	-0.06	0.02	0.07
Harvesting	0.04	0.76**	0.07
Marketing	0.06	0.55**	0.09
Financial record keeping	-0.09	0.55**	0.05
Crop record keeping	0.04	0.50**	0.56**
Pump maintenance	-0.01	0.07	0.57**
Irrigation system maintenance	0.03	-0.003	0.04
Fertilisation	0.02	0.53**	0.05
Weed control	-0.06	0.02	0.01

To the question of whether or not the risk taking in Nkomazi was related to the practices adoption the answer was yes, as summarised in Table 8.4. Significant correlations were found mostly in the case of the medium risk category where moderate risk was significantly correlated with: the soil preparation taking r=0.84 at P<0.05, taking soil samples r=0, 84 at P<0,01, fertilisation r=0.53 at P<0.05, scouting for pest r= 0.78 at P< 0.05, pest control r=0.75 at P< 0.05, scouting for diseases r= 0.80 at P<0.05, planting r=0.53 at P<0.01, cultivars selection r=0.76 at P<0,655,

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harvesting r=0.76 at P<0,05, marketing r= 0.55 at P<0,01, financial record keeping r=0.51 at P< 0.05, and crop record keeping r=0.50 at P< 0.05.

In high risk category, the significant correlation were found between Crop record keeping r=0.56 at P<0.05 and pump maintenance r=0.57 at P < 0.05. While non-significant correlation could not be found between the low risk category with any practice adoption.
The medium risk category was the only risk category that was found more positively correlated with several practices adoption among small-scale irrigation farmers.

8.6 Perceived problems in Nkomazi

Understandably, the most important and crucial perceived problems on the schemes are prioritised and presented in figure 8.3.
According to this figure, the majority of respondents (52.5%) have expressed a concern with the shortage of water, followed by the weed control expressed by 20.16% of respondents, thirdly the funding of farming activities(15.83%).
Finally, there was the problem of the electricity supply with (6.47%) and the fencing issue expressed by (5.04%).

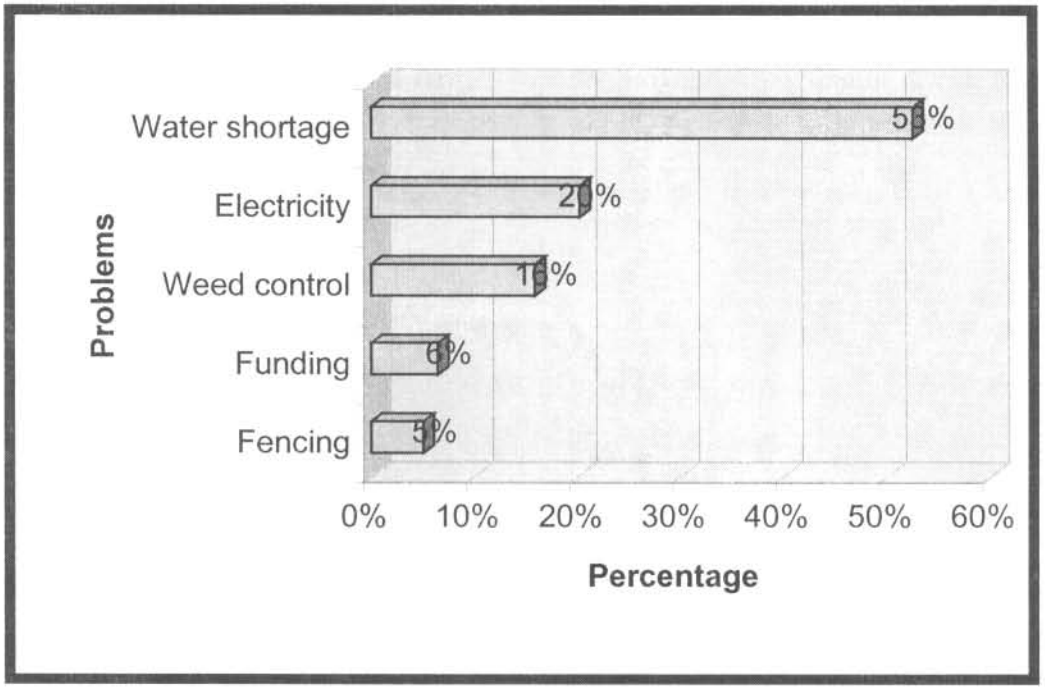

Figure 8.3 Main Farming problems in Nkomazi 2000