SURPLUS PRODUCERS AND THE FOOD PRICE DILEMMA IN TRADITIONAL AGRICULTURE IN SOUTHERN AFRICA : EMPIRICAL EVIDENCE FROM THE FARMER SUPPORT PROGRAMME.

JF Kirsten
Department of Agricultural Economics, Extension and Rural Development, University of Pretoria, Pretoria

HJ Sartorius von Bach
Department of Agricultural Economics, Extension and Rural Development, University of Pretoria, Pretoria

Uittreksel

Die doel van hierdie referaat is om nuwe resultate oor die faktore wat surplusprodusente van ander huishoudings onderskei, bekend te maak. Data verkry uit 'n vraelysopname in die gebiede van KaNgwane waar die "Farmer Support Programme" geïmplementeer is, is gebruik om die faktore wat met surplusprodusente geassosieer word, asook 'n markdeelnemingsprofiel van die huishoudings te bepaal. Hierdie resultate is vergelyk met die resultate van soortgelyke studies. Hierdeur het dit aan die lig gekom dat die resultate van al hierdie studies min of meer dieselfde is, met voorligting en die verskaffing van krediet wat deurgaans die bepalende faktore is vir surplusproduksie. Daar is ook gevind dat slegs 'n klein persentasie van die huishoudings surplusproduksie aan die mark lewer. Die meerderheid van die huishoudings is steeds netto verbuikers van voedsel. Weereens bevestig dit die dilemma van die bepaling van voedselpryse in bestaanslandbou.

Abstract

The purpose of this paper is to add new evidence to studies already done on factors associated with surplus producers and on the food price dilemma in traditional agriculture. Survey data of rural households in the FSP areas in KaNgwane was used to determine the factors which discriminate between surplus and deficit producers and to establish a market participation profile to illustrate the extent of the food price dilemma. In the second half of the paper these results are compared with the results from similar studies. Through comparing the results it was possible to obtain a better picture as to what factors determine surplus producers in traditional agriculture. By analysing the market participation profile in the various areas it is also possible to determine the extent of the food price dilemma in Southern Africa. The results obtained from the survey data in KaNgwane were in line with those from the other studies.

1.   Introduction

Factors determining surplus producers in traditional agriculture and the extent of the food price dilemma in Southern Africa have been addressed in a number of studies. Amongst these studies are Nieuwoudt and Vink (1989), Lyne (1989), Van Zyl and Coetzee (1990), Van Zyl *et al* (1991), Lyne and Ortmann (1991) and Dankwa (1992). While all of these studies were done using data from surveys amongst rural households in the traditional areas of Southern Africa, only the studies by Van Zyl *et al* (1991), Lyne and Ortmann (1991) and Dankwa (1992) were based on survey data obtained from rural households in areas where the Farmer Support Programme was implemented.

The purpose of this paper is to add new evidence to these studies. Survey data of rural households in the FSP areas in KaNgwane was used to determine the factors which discriminate between surplus and deficit producers and to establish a market participation profile to illustrate the extent of the food price dilemma. In the second half of the paper these results are compared with the results from the above mentioned studies. Through comparing the results it would now be possible to have a better picture as to what factors determine surplus producers. By analysing the market participation profile in the various areas it is also possible to determine the extent of the food price dilemma in Southern Africa.

Data used in this study were collected by means of a questionnaire survey conducted between December 1991 and March 1992 in the Mswati, Mlondozi and Nkomazi regions of KaNgwane. The sample included 205 rural households with 176 of the questionnaires providing usable information (n = 176).

2.   Differences between surplus and deficit producers in Kangwane

Through analysing the data it was possible to determine all the variables which differ significantly (at p = 0,10) between surplus and deficit producers for each of the regions surveyed. Differences between surplus and deficit food-producing households occur mainly with respect to farm income, other sources of income, expenditures on transport, education, food, etc. and investment in livestock. With respect to farming, the differences in general refer to maize planted and seed used. In KaNgwane it was also found that surplus producers diversify their farming operations to a greater extent than those of deficit producers.

By listing the mean value of the different variables it was evident that surplus producers earn a higher income from crops, spend less on maize meal, earn generally less from occasional work (as they spend more time on farming), spend more on education and use more seed and fertiliser than the deficit producer.

The surplus producing household, thus have surplus income available which can be used for education, other households goods and therefore lessen the need to earn extra income through occasional work. This also result in more time that can be allocated to the farming activities of the household. The question, however, remains as to the factors distinguishing surplus from deficit producers. This is addressed next.

3. Factors associated with surplus and deficit producing households in Kangwane

Similar to studies by Nieuwoudt and Vink (1989), Van Zyl *et al* (1991) and Lyne and Ortmann (1991), discriminant analysis was undertaken to determine the factors associated with surplus and deficit producing households. Results obtained from the discriminant analysis are presented in Table 1. As usual the entries in the first column indicate the relative contribution of each variable to the discriminant function.

Table 1 shows that access to credit and extension are the major variables discriminating between surplus and deficit producers. The access to finances is further accentuated by the significance of the savings variable in the discriminant function. Thus, to produce surplus agricultural goods, the availability of finance (savings or credit) is of crucial importance. The higher average savings account balance of the surplus producers as well as their access to credit through the FSP emphasise this important aspect. These results also indirectly illustrate the value of the FSP, which in KaNgwane is mainly based on the provision of credit, in increasing farm output. Access to markets is also an important variable in differentiating between surplus and deficit producers. Education expenditure plays the role of motivator which explains the negative coefficient of the variable in the discriminant function.

To summarise, surplus producers have significantly larger savings, greater access to credit, extension and markets, spend more on education and less on food items than deficit food-producing households.

4. A market participation profile of rural households in Kangwane

To have an indication of the extent of the "food price dilemma" in KaNgwane an analysis of the market participation of households for a number of crops was undertaken. The results as indicated in Table 2 again confirm the problem policy makers could encounter in formulating an agricultural pricing policy. The large proportion of households who are net buyers/consumers of all the various products (except maize) clearly emphasise the so-called "dilemma".

The market participation profile provides some interesting results. The low level of commercialisation of agriculture in KaNgwane is again confirmed by the small percentage of households selling more of their produce than what they consume (net sellers). The high percentage net sellers of maize (34.3%) is also an interesting deviation from the results of Van Zyl and Coetzee (1990). This could be due to the fact that households in FSP areas were surveyed in this case, whereas Van Zyl and Coetzee undertook their survey in non-FSP areas. This gives to some extent an indication of the impact of the FSP (through providing credit) on increasing the marketable surplus of agricultural products. The high proportion of total production marketed of each product indicates that the few net sellers are producing much

larger quantities than the majority of the households. This is also stressed through analysing the concentration of sales for each of the various products. At first this calculation was done using only the sellers (mixed and net sellers) as basis to determine the concentration of sales amongst households that sold some of their produce. This method differs from that of Lyne (1989) and Van Zyl and Coetzee (1990). It is viewed to be more correct to calculate the concentration of sales only amongst the sellers of produce. However, to compare our results with that of the before mentioned authors, a calculation was also done taking all households into account.

The results of the sales concentration indicator nevertheless indicate a very skew distribution of sales of agricultural produce amongst rural households in KaNgwane. Between 70 and 85% of all sellers sold only 20 % of the total marketed surplus. Furthermore between 3 and 5 % of the sellers sold more than 20% of the produce. This implicate that there are a few large farmers dominating the agricultural marketing scene amongst the majority of very small players in the market. The skew distribution of sales amongst the sellers of maize and potatoes is further illustrated by a Lorenz curve for "sales" distribution as indicated in Figure 1.

From the analysis of the individual data it was determined that one household (or farmer) contributed 36.9% to the total sales of onions, one household sold 42% of the beetroot, while two households together sold 35% of the marketed surplus of spinach. In the case of maize, the 3 largest producers together sold 42% of all maize marketed while in the case of potatoes two producers, respectively had 29.5% and 35.6% share of the total sales of potatoes (or 65% combined). This clearly indicates the domination of the market by a few large producers.

The question could therefore be asked whether these large producers (or post-emerging farmers or "commercial" farmers) are benefitting most from the Farmer Support Programme in KaNgwane. Is the FSP benefitting these households more than the very people, the majority of small subsistence and net consuming households, the programme was intended to support? It could be argued that it is only these large producers who could effectively make use of the credit facilities provided through Agriwane. It can also be expected that it will only be these few large producers who would demand various other services, eg. extension, marketing service, transport, etc.

The concentration of sales in the hands of a few farmers and the large proportion of households not producing enough for their own needs, again emphasises the food price dilemma. An increase in agricultural prices would clearly benefit a minority of households while the majority of households will experience a surge in absolute poverty. It is information and results like these which should clearly be taken into consideration in any pricing policy in agriculture in Southern Africa, now and in the future.

5. Comparing the results of different studies in traditional agriculture in South Africa

In this section of the paper the results obtained in KaNgwane are compared with the results of the studies referred to in the introduction. These studies were done in Lebowa, Venda, Kwazulu, KaNgwane (all FSP related surveys), and another study each in KaNgwane and Kwazulu.

Table 1: Estimated discriminant function for surplus and deficit producers in KaNgwane as a whole

| Explanatory variable	Standardized coefficient		Partial R²	Significance P < F	Group means		
	Surplus	Deficit			Surplus	Deficit	Significance
Savings	0.00054	0.00021	0.1384	0.0016	1688.00	561.08	0.0001
Access to extension	0.07965	0.06447	0.0885	0.0468	11.31	8.53	0.1110
Education expenditure	-0.00035	-0.00019	0.0623	0.1486	1923.08	676.01	0.0001
Access to credit	6.73452	6.52745	0.0979	0.0950	1.39	1.79	0.0231
	36	62		Error = 32%			
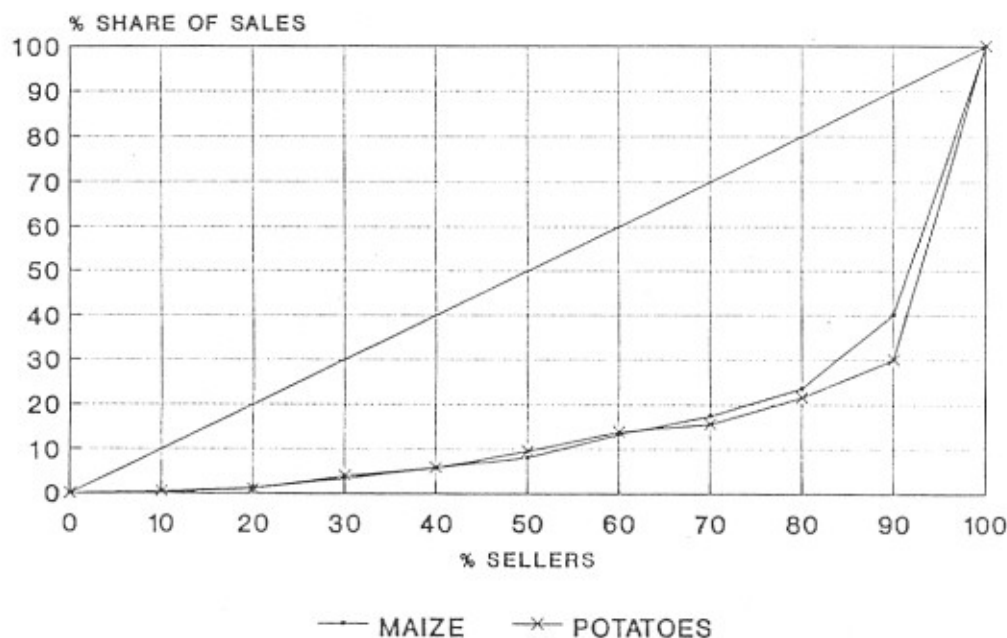
Figure 1: Lorenz curve for the sales of maize and potatoes in KaNgwane

5.1 Factors associated with surplus and deficit producing households

The results of discriminant analysis to determine the factors associated with surplus producers in Lebowa (Van Zyl *et al*, 1991), Kwazulu (Lyne and Ortmann, 1991; Nieuwoudt and Vink, 1989), Venda (Dankwa, 1992) and KaNgwane (this study) are compared in this section. The results are summarised in Table 3.

Four of the studies listed below were specifically conducted in areas where the FSPs were implemented. A general trend as to which factors are associated with surplus producers, flows from the results listed in Table 3.

It is evident that the various elements of the FSP are noted in all cases (admittedly not always directly). Extension, mechanisation services, access to credit and the provision and availability of inputs are reflected in all

cases as factors associated with surplus producers. Variables like area intercropped, use of chemicals and fertiliser are all factors that could be linked to the provision and access to extension services.

Thus, by comparing these results it is clear that the FSP through the provision of credit, extension, mechanisation and inputs contributes to increased agricultural production and to the existence of surplus producing households. It is interesting to note that the study in Kwazulu by Nieuwoudt and Vink (1989) also found credit and additional funds (savings and wages) as factors associated with surplus producers.

Additional funds (savings) was one variable listed in three of the five studies as being a major determining factor for surplus producers. This could imply insufficient credit facilities in all these areas with savings being mobilised to help finance agricultural production.

Table 2 : Market participation profile in KaNgwane (n = 176)

Product	Net Consumers	Mixed	Net Sellers	% of Total Production marketed	Sales Concentration Indicator (% of total marketed)							
					20%		50%		70%		80%	
	% of Households sampled				a	b	a	b	a	b	a	b
Maize	33.7	32.0	34.3	60.3	74	49.0	92	60.6	95	62.6	97	63.9
Potatoes	83.5	10.3	6.2	77.9	76	12.5	93	15.3	96	15.8	97	15.9
Cabbage	76.6	18.3	5.1	71.6	73	17.0	90	20.9	94	21.9	95	22.1
Spinach	75.0	16.5	8.5	92.7	81	20.2	92	23.0	95	23.7	97	24.2
Onions	77.8	17.7	4.5	39.5	83	18.4	92	20.3	96	21.2	97	21.5
Beetroot	76.7	15.3	8.0	79.7	85	17.8	92	21.4	95	22.1	97	22.6
Tomatoes	80.0	13.7	6.3	71.2	70	13.9	90	17.9	93	18.5	96	19.1

a = % of sellers
b = % of total households sampled

Table 3 : Factors associated with surplus producers

Area	Variables	Standardised Discriminant Function		
		Coefficient	Partial R²	Significance
Lebowa +	Chemicals : Insecticides Number of females Area Intercropped	0.2647 0.3605 0.1993	0.1572 0.1302 0.1493	0.0011 0.0047 0.0105
Venda #	Existence of Soil Erosion Education expenditure Availability of ploughing services Use of fertiliser	2.919 - 0.0110 18.394 0.0159	0.1791 0.3206 0.2603 0.0158	0.0917 0.0222 0.0520 0.1000
KaNgwane	Savings Access to Extension Access to Credit Education expenditure	0.00054 0.07965 6.7345 - 0.00035	0.3840 0.06447 0.0979 0.0623	0.0016 0.0468 0.0950 0.1486
Kwazulu *	Use of fertiliser Contractor services KFC credit Area rented Use of chemicals	0.465 0.234 0.194 0.611 0.407	- - - - -	0.0001 - - 0.0001 0.0001
Kwazulu **	Purchase inputs on credit Utilise other people's land Savings account Employ outside labour Monthly wage remittances	0.5434 0.3872 0.2787 0.2765 0.2240	- - - - -	0.0001 0.0001 0.0001 0.0001 0.0005

Sources: +   Van Zyl *et al* (1991); #   Dankwa (1992); * Lyne and Ortmann (1991);
           **   Nieuwoudt and Vink (1989)

Table 4 : Market participation profile in different regions

Location	Researchers	Crop	MARKET INVOLVEMENT INDICATOR			Share of production marketed	Sample Size
			Net Buyers/ Consumers	No net buyers/sellers	Net sellers	(%)	
			% of households				
KaNgwane	Van Zyl & Coetzee (1988)	Maize Groundnuts	68.7 81.7	7.4 4.6	23.9 13.7	62 52	394
Kwazulu	Lyne (1989)	Maize Potatoes	95.2 93.6	0.1 3.3	4.7 3.1	49 40	193
Venda *	Dankwa (1992)	Maize	51.7	48.3	0	-	54
Lebowa *	Dankwa (1992)	Maize	72.0	28.0	0	-	66
KaNgwane *		Maize Potatoes	33.7 83.5	32.0 10.3	34.3 6.2	60 78	176

* FSP areas

5.2   Market participation profiles

The results of studies on the market participation profiles in traditional agriculture in KaNgwane (this study and Van Zyl and Coetzee, 1990), KwaZulu (Lyne,1989), Venda (Dankwa, 1992) and Lebowa (Dankwa, 1992) are compared in Table 4. The market involvement indicator for the various produce and the different regions provide a similar trend with a large proportion net buyers/consumers and only a small percentage of house-holds selling more produce than they consume. The only difference is recorded with regard to the middle group (no net buyers or sellers). The proportion of households in this group is considerably higher for the studies done in areas where FSPs were implemented. This shows that the FSP at least helped to move some households to a position where they are able to sell some (admittedly a small proportion) of their produce to the market enabling them to earn some income from their farming enterprise. The skew distribution of sales is again emphasised by the high proportion of production marketed compared with the relatively small number of households classified as net sellers in each case.

6.   Conclusion

The results from the survey data in KaNgwane show that significant differences between food-surplus and deficit producing households occur mainly with respect to farm income, specifically crops, other sources of income, expenditures on transport, education, food, etc. and investment in livestock. With respect to farming, the differences in general refer to maize planted and seed used. It thus seems that access to land (and other produc-tion factors) determines whether a farmer (household) will be a food deficit or surplus producer. In general, surplus producers diversify their farming operations to a greater extent than those of deficit producers. Income is also derived from a larger number of sources.

Access to credit and extension are the major variables discriminating between surplus and deficit producers in KaNgwane. The access to finances is further accentuated by the significance of the savings variable in the discriminant function. Access to markets is also an imported variable in differentiating between surplus and

deficit producers. Surplus producers have significantly larger savings, greater access to credit, extension and markets, spend more on education and less on durable items than deficit food-producing households.

An analysis of the market participation profile of rural households shows a skew distribution of sales. The analysis also confirms that a large number a households are still net consumers/buyers of food emphasising the food price dilemma in traditional agriculture.

The results from KaNgwane were then compared with results from similar studies in other regions of Southern Africa. It is evident from this comparison that access to credit, extension and extra savings are important factors determining surplus producers in all these areas. A small percentage of households marketing surplus produce is also typical in all cases.

References

DANKWA, KB. (1992). Determinants of household food security in Lebowa and Venda. Unpublished M.Sc Agric thesis. University of Pretoria.

LYNE, M. (1989). Unpublished Survey results. University of Natal. Pietermaritzburg.

LYNE, M and ORTMANN, G. (1991). Evaluation of the Kwazulu Farmer Support Programme. Draft Interim Research Report. University of Natal. Pietermaritzburg.

NIEUWOUDT, WL and VINK, N. (1989). The effects of Increased Earnings from Traditional Agriculture in Southern Africa. The South African Journal of Economics, Vol 57, No 3:257-269.

VAN ZYL, J and COETZEE, GK. (1990). Food Security and Structural Adjustment : Empirical evidence on the food price dilemma in Southern Africa. Development Southern Africa, Vol 7, No 1:105-116.

VAN ZYL, J, MACHETHE, C, SARTORIUS VON BACH, HJ and SINGINI, RE. (1991). The effects of Increased Earnings from Traditional Agriculture in Lebowa. Agrekon, Vol 30, No 4:276-278.