

**CULTIVATION TRENDS IN THE TRANSKEI AND CISKEI: 1940-1996**

By

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**Abstract**

The large areas of abandoned arable fields in the communal areas of the Eastern Cape and KwaZulu Natal are often interpreted as evidence that rural people are no longer interested in farming and largely rely on off-farm sources of income for their survival. However, this study of land use practices in Nompva village along the Transkei coast, shows that farmers have not abandoned cultivation but have shifted from the extensive cultivation of maize in distant fields to the intensive intercropping of maize and other food crops in fenced gardens adjacent to homesteads. Studies of yields from fields and gardens indicate that this has been an effective intensification strategy adopted by rural households to maintain yields in the face of shrinking resources and increasing risks. Evidence of changing land use practices is presented and the reasons for these changes identified and evaluated.

## Introduction

Large areas of un-utilised or abandoned arable fields are a common feature in South Africa's communal areas, particularly those in the Eastern Cape and Kwa-Zulu Natal. This 'under-cultivation' has become a concern in government circles as well as amongst agricultural economists and other rural development specialists. Estimates of land abandoned range from 20-100 percent with the highest levels of abandonment (100 percent) being recorded in parts of the Ciskei (Andrew, Ainslie and Shackleton 2003). This has led some to question whether rural people are engaged or interested in farming (Human Sciences Research Council 2003). As a consequence, considerable academic and policy debate over the possible causes and potential strategies to remedy this situation has been going on.

In this paper I will present a case study of historical changes in cultivation practices in Nompa, a village in the Shixini administrative area along the Transkei coast. This case study documents the process of 'under-cultivation' over the last 60 years and reveals some surprising changes in land use that challenge the general perceptions of agricultural decline. This case presents a much more positive assessment of crop production than is usually presented for communal areas in South Africans' African reserves. This positive assessment is partly a result of the use of new data sources and research methods, partly because Nompa is located in a relatively high agro-ecological region of the country with a biological productivity of from 8.75-10 tons of biomass/hectare/growing season and partly because it has experienced relatively few externally imposed disruptions to local social relations and land use practices. The results of an aerial photographic analysis are discussed in conjunction with the results of some other studies of agricultural activities in this area. Together this data indicates that the decline in agricultural productivity in Nompa is probably not as great as is generally believed to be the case. This data shows that local households have successfully adapted their cultivation practices to maintain yields in the face of dwindling resources and increasing risks. An explanation as to why these changes took place is also developed.

The structure of this paper follows a very conventional format for scientific papers. I begin with a brief outline of the study site and the methods used to research land use changes. Thereafter the results obtained from the different data sources and methods are presented. The discussion attempts to pull together all the different threads and provide my own interpretation of the data and explanation as to the causes of these changes. I end off with a brief assessment of the extent to which this case study is unique or indicative of what has occurred in other areas.

## Study site

Nompa is a small village located on the west bank of the Shixini River in a spatially marginal region of the Transkei, one of South Africa's African Reserves in the Eastern Cape Province. It is a communal

tenure area in which local residents' livelihoods depend on a diversity of livelihood strategies. Most households depend very heavily on earnings from migrant remittances and state welfare grants. These off-farm livelihoods are supplemented with on-farm livelihoods such as the use of natural resources and agricultural activities such as livestock farming, and small-scale cultivation. Agricultural production does not however, meet subsistence needs and very little if any produce is sold on the market (McAllister, 2001).

Nompa is also a relatively conservative traditional area where Chiefs and local headmen are still seen as legitimate local authority structures and continue to take responsibility for decision-making around access to, and use of land and other natural resources. The local population is also relatively stable. This area did not experience any in-migration as a result of apartheid forced removals policies and there have been no major disruptions to social networks due to villagisation/'betterment' processes in this village.

Nompa is located in one of the few areas in South Africa suited to dry land cultivation (Fox and Rowntree, 2002). The mean annual rainfall for this area is relatively high at 1090ml. Due to its location along the coast it experiences no frost. However, the terrain is very rugged with deeply incised valleys. There is very limited evidence of severe erosion and most of this is found adjacent to roads and paths (Whisken, 1991).

## **Methods**

Both primary and secondary sources of data were used to investigate land use changes and the reasons for these changes. The primary sources included three sets of aerial photographs of the Shixini area, together with archival material and in-depth interviews with individuals and groups. The methods used to collect and analyses these primary data are briefly described below. The secondary sources were other published historical and anthropological studies of the Nompa area and the Transkei in general. These secondary sources proved invaluable in providing insights into the broader macro economic and political policies and trends that interacted with local dynamics and impacted on the choices made by local residents.

### **The Aerial Photographs**

Four sets of stereoscopic aerial photographs for the whole Shixini area (including Nompa) were obtained and analysed. The first set was for 1942, (job number 5 of 42), the second set was for 1962 (job number 468), the third for 1982 (job number 101/E) and the fourth for 1996 (Job No 983, strip 22-3) (Chief Directorate of Surveys and Mapping, Cape Town). The photographs were taken at a 1:30 000 scale. The data from the 1942, 1962 and 1982 photographs for the whole Shixini administrative area was quantified as part of my Master of Arts thesis (Andrew, 1992). This research quantified the data on land-use,

settlement, infrastructure, and rivers using the PkArc Info Geographic Information Systems (GIS) programme to map and analyse the spatial data. Three broad sets of data were mapped:

1. line data of the road, path, river and stream networks
2. point data on huts, livestock enclosures, trading stores, schools and clinics.
3. polygon data of land use. Specifically gardens and cultivated fields.

Each hut was categorised according to the homestead to which it belonged, the size of the stock enclosure associated with it and whether it had a garden or not. Twelve categories of huts were identified. These twelve were divided into two main groups, one set was associated with a garden and the other was not. Within these two groups huts were classified according to the size class of stock enclosure they were associated with. Five categories of stock enclosure were identified. The first size class was a stock enclosure approximately the same size as an average round hut. The second size class was twice the size of an average round hut and so forth up until the fifth size class. Those households not associated with a stock enclosure were given a separate classification. An average round hut was taken as the unit of measure as huts had a relatively standard size. Unfortunately, due to the large scale at which the aerial photographs were taken and the difficulties of ground-truthing the historical photographs, it was not possible to differentiate between used and abandoned households.

The polygon data provided information on the number, size and location of fenced gardens (adjacent to homesteads) and the area of cultivated fields. Gardens were relatively simple to identify but difficulties arose when trying to differentiate between fallow and recently cultivated fields as fields are not individually fenced and not easily differentiated from the neighbouring areas. It was evident that cultivated or recently cultivated land tended to have a more regularly lined texture produced by ploughing activities while fallow arable land tended to have a more irregular pattern of vegetation within the field outlines. However, the time of year that the photographs were taken, soil moisture levels, slope gradient and shadows often made these differences difficult to identify. Consequently, the classification of fallow and cultivated fields may have a large margin of error.

The Nompk data from the 1996 photography was mapped and analysed more recently in an attempt to update the data from the study by Andrew (1992). The data mapped was the same as that for the earlier study.

The analysis of these photographs yielded information on population size and growth, trends in use of livestock enclosures, and trends in the use of homestead gardens and arable fields.

### **Archival Research and Review of Historical Literature**

There are a number of historical studies of black rural areas in the Eastern Cape province that provided valuable insights and sources of information on the agricultural changes that have occurred in the Nompá area and the Transkei in general and the broader socio-economic and political processes that influenced them. These include: Beinart, W (1982), Bundy, C (1979, 1988), Haines, ES (1933), Hall, M (1978); Hammond-Tooke, WD (1957), Hunter, M (1936), Kropman, M (1979), Moll, TC (1984, 1988), Shaw, EM & Warmelo, NJ van (1972), Simkins, C (1981), and Soga, JH (1932).

This information was supplemented with archival data on the Willowvale district in particular (of which Nompá and Shixini are a part) and the Transkei as a whole. The specific sources drawn on include:

- the Willowvale Magistrates records (Vol. 1, 4, 5, 7, 13, 54, 59, 63, 68, 69, 82, 84, 86, 87, 88) Cape Archives, Cape Town.
- the Umtata Magistrates records (Vol. 174), Cape Archives, Cape Town.
- the Chief Magistrate's records for the Transkei (Vol. 3), Cape Archives, Cape Town.

### **The In-depth Interviews**

A series of in-depth interviews were conducted with Nompá residents in June 2002. These included one group interview with +/- 20 residents, and individual interviews with the local headman (responsible for land allocation) and six other elderly residents of the village. The group interview began with an outline and explanation of the results of the analysis of the aerial photograph data and then went on to explore whether this data matched their experience and what the possible causes of the changes in land use practices were. The interview with the headman focused on similar issues but in addition explored issues around the allocation and use of land, and rights to land in general.

The six elderly residents were selected by our field assistant, himself someone who was born and raised in Nompá, on the basis of age, long term residence in Nompá and availability. These informants were living in homesteads dispersed around the village. They included two men and four women between the ages of 83 and 69. During each unstructured open-ended interview, the respondent was asked about their life history with a particular focus on their land-use and farming practices as well as their employment history (or those of their husbands).

In addition, two in-depth interviews were conducted with people who had been traders in the Willowvale district from the 1930s until the 1970s. The focus of these interviews was on agricultural trade in the district.

## Secondary Data Sources

Shixini has been a research study site for anthropologists and students at Rhodes University for some time. This research provided valuable secondary data sources on livelihoods and land use practices in this area. The specific sources drawn on include: McAllister, P.A. (1979), De Wet, C.J. & McAllister, P.A. (1983), Berchmore, A. (1988), McMillan, W. (1989); Andrew, 1992; Heron, G.S. (1994), and McAllister, P.A. (2000) and (2001).

## Results

### Results of the Aerial Photograph Analysis

#### *Population Growth Trends*

Figures 1 and 2 illustrate the trends in Nompa's population growth between 1942 and 1996 as indicated by the number of huts and households. The number of huts per household did not change significantly between 1942 and 1982. In 1942 the average number of huts per household was 2.4, in 1962 it was 2.2 and in 1982, 2.3 (see table 1). Rapid population growth is a feature throughout the period under study but the rate of growth changes over time. The growth rate is relatively slow (0.7 percent) between 1942 and 1962, but became much more rapid (2.1 percent) between 1962 and 1982 and then began to slow down again (0.9 percent) between 1982 and 1996. The trends between 1942 and 1982 follow closely the broader population growth trends evident in the census data for the Transkei (Simpkins, 1981). As this area did not experience any in-migration from 'white' South Africa, the rapid rate of population growth in the 60s and 70s is attributed to natural population growth and apartheid policies that limited urbanisation processes. The lower rate of growth in the 80s and 90s could be a result of increasing rates of urbanisation linked to the political transition to democracy but may also be a result of declining birth rates, increasing death rates or a combination of these factors.

Frequency	1942	1962	1982	Percent Change 1942-62	Percent Change 1962-1982
No. of Huts	1269	1301	1888	2.5	45.1
No. of Households (HH)	501	585	836	16.8	42.9
Mean No. of Huts/HH	2.5	2.2	2.3		
No. HH with gardens	131	359	699	174	95
No. HH without gardens	370	226	137	-39	-39

Percentage of HH with gardens	26%	61%	84%		
Mean garden size	0.2088	0.1948	0.4191	-6.7	115.1
Area of gardens	30	68	327	127	383
Area of fields	1327	1281	650	-3.4	-49.2

**Table 1: Summary of GIS data on households, gardens and fields for Shixini: 1942-1982**

*Livestock Enclosures*

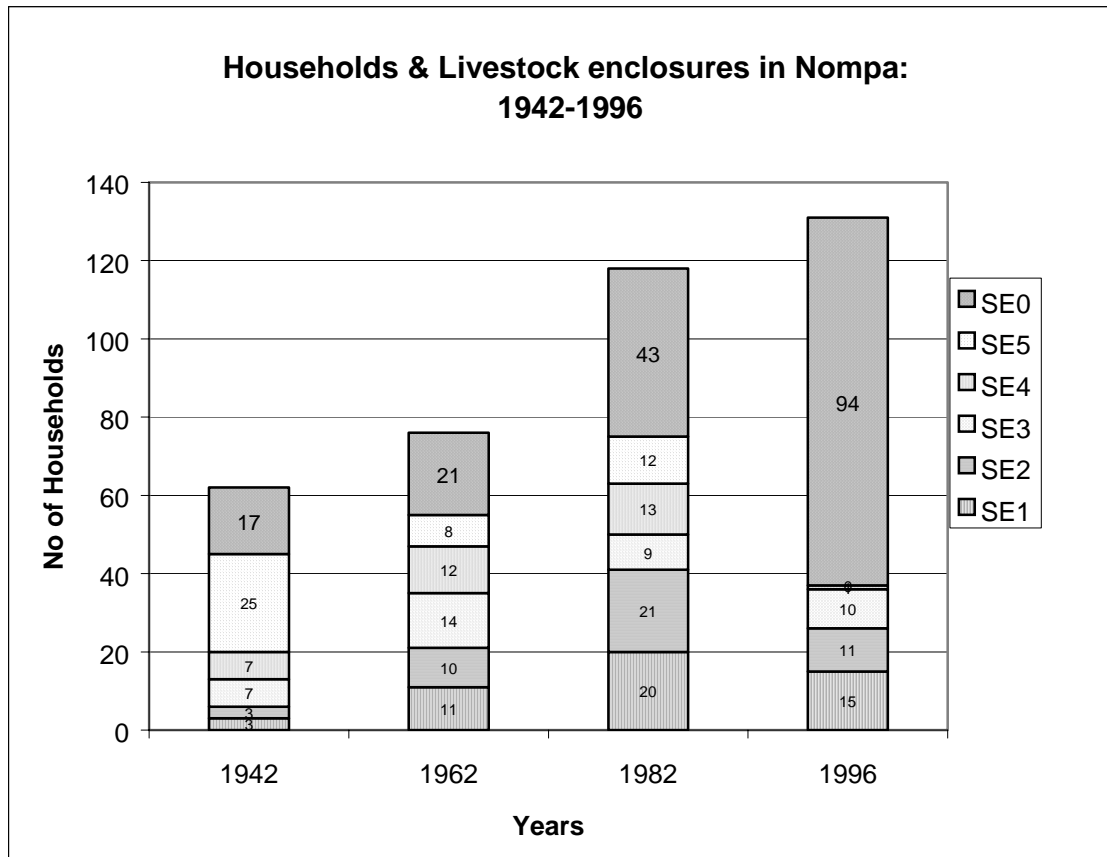
Figure 2 illustrates the trends in the size and number of Nompa’s livestock enclosures between 1942 and 1996. It indicates that livestock enclosure sizes have been declining and the number of households without livestock increasing. So much so that the situation in 1996 is exactly opposite to the situation in 1942. In 1942, 73 percent of households had livestock enclosures and 27 percent had no enclosures. By 1996, 28 percent had livestock enclosures and 72 percent had none. It is also significant that 40 percent of households had livestock enclosures of the largest size class in 1942, but today there are none. When this data is considered in conjunction with other livestock data and population growth trends for the Transkei (Simpkins, 1981; Moll, 1988), it indicates that there has probably been a significant decline in per capita livestock holdings since the 1940s. This is due to the rapid increase in population and the relatively stable and/or gradually declining livestock numbers. Given the continued importance of livestock, particularly cattle, as a source of food, a means of cultivation, and symbol of wealth and status in these communities (McAllister, 2001), this decline in the proportion of households with large numbers of livestock and the increase in households with little or no livestock, points to growing poverty and declining savings.

*Cultivation*

The aerial photographic data also revealed significant changes in cultivation trends within Nompa since the 1940s (see figure 1). One of these changes was a dramatic 49 percent decrease in the area of fields under cultivation between 1962 and 1982. The decline prior to 1962 was much smaller at four percent (see table 1).

Figure 1 and table 1 also show the massive expansion of garden cultivation during the period under study. The GIS data revealed two distinct periods of expansion. During the first period, 1942 to 1962, there was a very rapid growth in the number and proportion of households cultivating gardens. An increase of 174 percent between 1942 and 1962 as opposed to a 95 percent increase during the 20 years after 1962. The second period was characterised by significant increases in the mean size of gardens.

The total area of gardens increased slightly between 1942 and 1962 and much more rapidly in the period 1962 to 1982. Mean garden size decreased from 0.2088 hectares in 1942 to 0.1948 hectares in 1962 and subsequently increased dramatically to 0.3570 hectares in 1982. This later period of expansion in the size of gardens coincides with the dramatic decline in field cultivation.



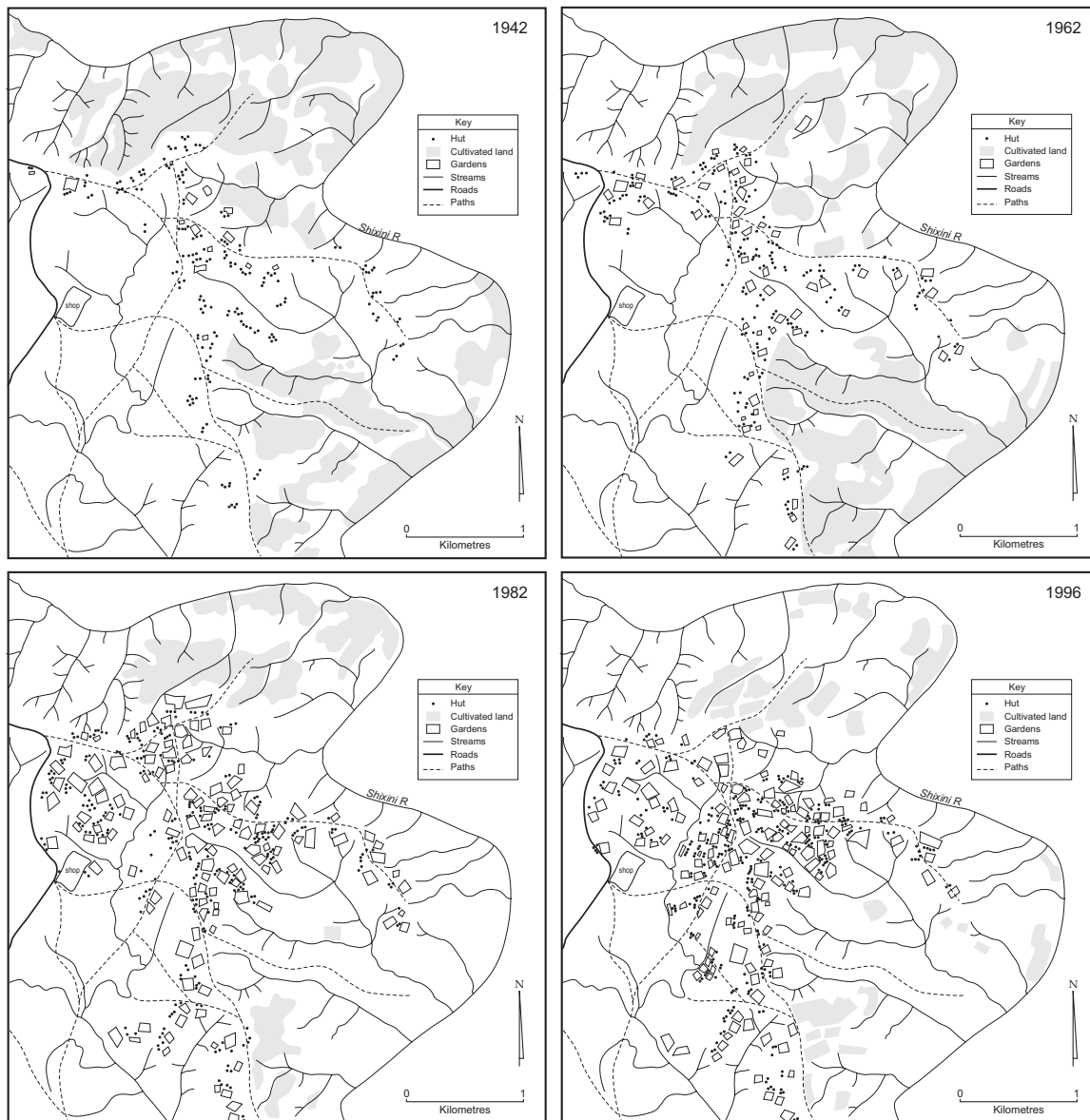
**Figure 2: Trends in population growth and livestock enclosures in Nompá: 1942-1996.**

It is important to note however, that garden size varied quite considerably between poor and wealthy households. The data clearly indicates that there was a positive relationship between garden size and stock enclosure size (see Table 2). The larger the stock enclosure, the larger the garden. However, when the data was separated into poorer and wealthier households (on the basis of presence and size of livestock enclosures) the data revealed more interesting patterns. The mean size of gardens for households with large livestock enclosures (wealthier households) only increased significantly after 1962 (when field cultivation was rapidly being abandoned). Poor households on the other hand, with no livestock or small stock enclosures in the first, second and third size categories, made very large increases in the size of their gardens throughout the period under study. This faster rate of growth in the size of gardens amongst poor households, suggests that large gardens were far more important to poor households at an earlier date. It is possible therefore, that wealthy households were able to maintain field cultivation for much longer than poor households. This evidence suggests that growing poverty as

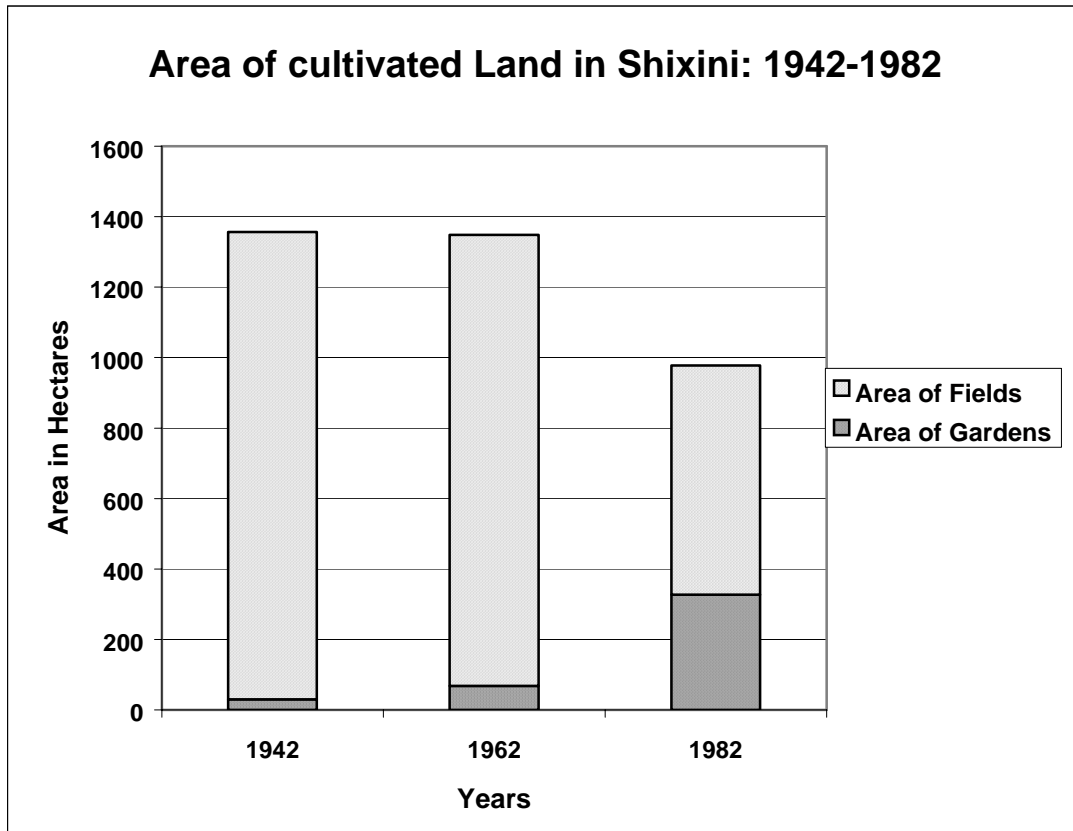
reflected in diminishing livestock resources were a major factor encouraging the growth in the number and size of gardens.

Stock Enclosure Size Class	Mean Garden Size (Hectares)		
	1942	1962	1982
0	0.15	0.01	0.292
1	0.08	0.16	0.337
2	0.12	0.17	0.34
3	0.16	0.25	0.342
4	0.2	0.19	0.432
5	0.31	0.26	0.495

**Table 2: Relationship between household size, garden size and livestock enclosure size in Nompa: 1942-1996.**



**Figure 1: Demographic and land use changes in Nompa: 1942-1996**



**Figure 3: Changes in the area of land under cultivation in Shixini 1942-1982.**

**Results of archival research**

An examination of the historical literature and archival sources does in fact support the findings of the aerial photography analysis and provides many pointers as to the possible reasons for these changes. In the discussion that follows we will first address the question of whether the historical literature and archival material provide data that supports the findings of the aerial photograph analysis. Once this has been dealt with we will move on to identify the major reasons for the agricultural and land use changes as identified in these sources.

Hunter (1936), Bundy (1988) and Beinart’s (1978, 1979, 1980, 1982) historical studies of peasant agricultural activities in the former Ciskei and Transkei during the colonial period present considerable evidence of a long period of growing peasant production from the beginning of the colonial period until the 1930s. There were regional differences in this process, with the former Ciskei areas being incorporated into the Cape Colony at an earlier stage and reaching its peak in peasant production 20-30 years earlier than many areas in the Transkei – particularly the coastal areas that include Nompá. During this period that Bundy terms ‘the rise of the African peasantry’ there was an enormous increase in livestock numbers, particularly sheep, as well as a massive expansion in cultivation (Bundy, 1979). It was in this period that the

plough was introduced and adopted by local farmers to increase the cultivation of maize in particular, but other crops as well. The larger quantities of agricultural produce were traded with the white traders who began conducting their business in these areas at the beginning of the colonial period. In the case of the Ciskei the colonial period began some time between 1830-1860, while in the Willowvale district of the Transkei this began after annexation in the 1879. The discovery of gold and diamonds and the consequent rapid growth of urban centres particularly on the Witwatersrand, increased the demand for agricultural produce and provided a lucrative market for peasant produce. Cattle, goats, sheep, wool, skins, and maize were the most common agricultural products sold by peasant farmers to white traders. While the livestock products were exported, it seems that the maize produced and sold in the interior of the Transkei, where it was difficult to access distant urban markets and inadequate storage facilities were available, remained in the local area or was circulated within the Transkei. White traders used a barter system for the purchase of maize. The tokens given to maize sellers could then be used to purchase other items in the store where the maize was sold. The traders then stored the maize and sold it back later in the season or exported it to other areas in the Transkei (Haine, 1933; Bundy, 1979).

In the Willowvale area this trade began with annexation in 1879, the creation of the Willowvale district and the establishment of the magistrates office on the site of what later became Willowvale town. According to Hammond-Tooke (1957), the only Europeans to settle in the Gatyana district prior to the establishment of the Magistracy were two sets of missionaries and some military personnel at Fort Bowker and Fort Malan. Other mission stations were established from the 1880s onwards. The first trading stations in the area were established after 1879 in the Wesa, Nqabarana A and Nqabarana B locations. The Nqabarana locations are located just across the river from Nompa. Over the next 70 years 36 white traders set up shop in this district (CA, 1/WVE Vol. 54, No. 2/4/2)<sup>i</sup>. One of these was the Ngadla shop at Nompa.

The historical literature also indicates that this period of growth in peasant production was followed by a period of decline beginning some time between 1900 and 1930s during which the trade in agricultural produce began to decline and the number, frequency and duration of migrant labour contracts to the cities increased (Bundy 1979, Beinart 1982). This decline occurred as a result of economic changes in the South African economy and changing state institutions and policies. On the one hand the growth of the industrial and urban sectors and the associated increasing demand for labour encouraged the intensification of labour recruiting processes and the development of state policies aimed at securing more labour. On the other hand the considerable growth of the white commercial farming sector was facilitated by favourable government policies and subsidised that effectively excluded black peasant farmers from South Africa's agricultural markets (Bundy, 1979). The resulting decline in agricultural trade in areas like Nompa was probably gradual. The archival material indicates that although white traders found it more and more difficult to maintain their trade in agricultural produce they continued this activity until they were effectively forced to leave the Transkei in the late 1960s and 70s (CA, 1/WVE Vol 54, No 2/4/2).

Analysis of state statistical census and estimates undertaken by Simkins (1981) and Moll (1988), supports the aerial photographic data and historical literature and indicates that there was a gradual and slow decline in total agricultural output in the Transkei's rural areas in general between the 1930s and 1980s. This data showed that cattle and sheep numbers decreased considerably while goat numbers declined more slowly. It was also clear that maize output had diminished considerably during this period along with other crops. While the total output figures for the Transkei suggest that the process of agricultural decline was relatively slow, Simkins (1981) argues that per capita output declined dramatically after the mid 1950s due to an exponential increase in population growth. As population increased, the number of stock units per household declined, thus reducing earnings from livestock and undermining cultivation.

### **Results of interviews**

The in-depth interviews with six elderly Nompa residents and the group interview proved to be an invaluable source of data that provided detailed insights into the lives and agricultural choices made by local residents. This data helps to explain why the changes evident in the aerial photographs, occurred. It also reveals causal factors operating at a local level that have not been identified by any of the other data sources.

Each of the six informants had completely different and unique life histories. These stories are briefly summarized in Table 3 below. The general trends evident from these life histories include:

- All respondents initially lived with the parents of the husband during the first few years of their marriage. The length of period during which the newly married couple lived with in their parent's homestead ranged from 8 to 10 years. In two cases the respondents inherited their parent's homestead when they died.
- Upon marriage all respondents were given a field to cultivate. These fields were usually inherited from a parent or grand parent.
- Only one respondent (the wealthiest in terms of livestock) had parents who were cultivating a garden at the time when the respondent got married.
- All of the respondents were cultivating a garden in 2002.
- Most gardens were established soon after the new household was established.
- Most gardens have been expanded at times that coincided with the death of the spouse or sickness/absence of other significant adults in the household, or with the loss of employment and/or with the abandonment of the arable field.
- Only one of the respondent's households was cultivating a field during 2002, and this field is very atypical in that it is fenced and located next to the homestead and garden. It is also a relatively new field in that it was first ploughed in 1959.

- The two most commonly cited reasons for abandoning fields or establishing/expanding gardens was due to 1) fields being too old and not producing enough, and 2) damage to field crops by livestock.

Characteristic	Nompa Informants					
	1	2	3	4	5	6
Year abandoned field	1973	1995	1957	Not yet	1972	1975
Abandoned field due to declining yields & high risks		X				X
Abandoned field due to old soils and erosion						X
Abandoned field due to labour & resource shortages	X		X		X	
Year established garden	1956	1965	1945	1951	1947	1955
Est. Garden because field not producing enough	X	X	X		X	X
Expand Garden when field abandoned		X			X	X
Expand garden because field not producing enough					X	

**Table 3: Summary of land use changes from six life histories of Nompa residents**

## Discussion

### Discussion of the Aerial photographic Evidence

The results of the aerial photograph analysis indicate that a number of changes were occurring at the same time and were probably related. These included:

- the rapid increase in population between 1962 and 1982
- the decrease in the size of livestock enclosures
- the increase in the proportions of households with small livestock enclosures or none at all,
- the decrease in the area of cultivated fields particularly after 1962, and
- the dramatic increase in the number and size of gardens.

The data clearly shows that the most significant changes in land use occurred between 1962 and 1982 and coincide with the explosive growth in population during this period. The data on cultivation practices, together with the data on livestock enclosures seems to indicate that there was a process of agricultural decline and impoverishment taking place. But it also indicates that local households changed their land use practices and adapted to the changing circumstances. The question now becomes, can the reduction in area of land cultivated be interpreted as evidence of a decline in yields and productivity? Is

it possible that what we are seeing is a process of intensification that has allowed rural households to maintain their yields by changing their land and resource use practices? To answer this question we need to examine data on yields.

Two studies on agricultural production including yields have been undertaken in the Nompa area. The first was a broad study of agricultural production undertaken by an Anthropology honours student, McMillan in 1989. The second was a study of yields undertaken by Professor Pat McAllister in 1999/2000. These studies show that yields per unit area from homestead gardens are much higher than those for fields and indicate that the change in land use practices evident from the aerial photographs was a process of intensification that helped farmers to maintain yields in the face of increasing resource shortages and risks. The results of these two studies are outlined briefly below.

McMillan's (1989) agricultural survey of six villages in the Shixini area, including Nompa, found that maize yields per hectare were much better for gardens than fields. So much so that although the average size of gardens was much smaller (6706m<sup>2</sup>) than fields (15755m<sup>2</sup>) they yielded more maize (3.76 bags as compared to 3.01 bags for fields) in addition to other crops such as beans, pumpkins, and other vegetables. This indicates that although the aerial photo data indicates a dramatic decline in area of land cultivated, this should not be interpreted as an equal decline in production or yield. McMillan's data suggests that the opposite is true. While the area of land cultivated has declined, yields have been maintained and even improved by switching to the more intensive cultivation of homestead gardens.

McAllister's (2000) measured and calculated the maize yields per hectare from 16 household gardens in Nompa and two other neighbouring villages. Care was taken to ensure that a range of household types was sampled. Although he found a significant variation in maize yields that ranged from 757kg to 4698kg per hectare, the average yield was 1.458.39kg. This he argues is only 75 percent of the harvest, the other 25 percent being consumed during the growing season. This brings the total average yield to 1 884.39 kg. McAllister (2000) acknowledges that these measurements are much higher than the maize yield estimates based on questionnaire surveys undertaken by McMillan and studies in other parts of the country at different times. However, he also identifies two studies (Hunter, 1936; Bembridge, 1991) that have produced evidence of higher yields based on more precise measurements of harvests. McAllister argues that these discrepancies between the results of questionnaire surveys and results based on actual measurements can be attributed to underestimates of yields related to the difficulties of making accurate estimates of yields.

There are a number of reasons for this. One is that small quantities of maize are regularly harvested during the growing season and consumed immediately. Secondly, farmers use different units to quantify their harvest. These may be bags (that may differ between farmers), sledges (that also differ in size), grain storage tanks or pits. These last two units are also problematic as all the maize may not be stored in

these tanks or pits, especially if some is used for beer brewing. Consequently it is difficult to get a standard unit to accurately measure yields. Thirdly, McAllister (2000) argues that the term 'harvest' is culturally specific thus making it difficult to interpret responses to questions about 'harvest'. To people in Nompa, 'harvest' means the amount of maize taken at harvest time. It often does not include the green maize. McAllister also found that the harvest is divided into three categories – the best quality cobs (from which the seed for next year is taken), the good maize and the spoilt maize. When asked what their harvest is, many farmers only mention the amount of maize that fits into the first category – the best quality maize.

McAllister (2000) argues that this average yield of 1.884.39kg per hectare compares very favourably with the yields of 2000 kg per hectare obtained by dry-land commercial farmers in South Africa's 'maize triangle'. Especially when you take into consideration the large quantities of other crops and vegetables harvested from homestead gardens in Nompa in addition to maize. This suggests that Nompa farmers have been quite successful at maintaining high yields despite the reduction in the area of land cultivated. McMillan's (1989) data on yields from fields and gardens also indicates that yields per hectare from gardens are better than those of fields and compensate for the loss of arable fields. Together this evidence indicates that perceptions of agricultural decline based on the observation of large areas of unused arable land in communal areas such as Nompa are misinformed and ill conceived, because they ignore the significance of the growth of garden cultivation.

### **Discussion of Life History Evidence**

We begin by evaluating the most commonly cited reason for abandoning field cultivation, that fields (and soils) were "too old and not producing enough". Interviews with local residents and surveys of land use (MacMillan, 1989 & Andrew, 1992) indicate that it was common practice for local residents to cultivate maize in their fields on an annual basis without any fallowing practice. The use of fertilizers and manure was also found to be low and may have decreased over time as per capita livestock numbers declined. In addition, residents indicated in the group interview that the cost of purchasing fertilised doubled when the black traders took over the shop in 1969 and access to credit was denied. This made it extremely difficult, if not impossible, for local farmers to invest in fertilisers. They also explained that during the 1980s when Professor Pat MacAllister set up a cooperative that sold fertiliser at cost, many local residents purchased these fertilisers and began to cultivate their fields again. Unfortunately, this supply did not last and cultivation of fields was abandoned once more. Given this situation, and the description of land use practices provided by Monica Hunter (1936), we can conclude that the arable fields have probably been used annually with insufficient application of manure and fertilizers for a very long time, possibly as much as 70 years given that the informants indicated that they were using their grandfather's fields. It is logical to expect therefore that soil fertility would have declined over time and led to declining yields. A study of soil fertility in the Nompa area confirms that soil fertility was lower in

fields than in gardens (Berchmore, 1988). It is interesting to see from the life histories that the only family that is still cultivating a field is one that has a relatively new fenced field that was first cultivated in 1959 and a large herd of livestock that provides manure for the field.

However, low soil fertility is not the only factor that would influence the productivity of fields. Insufficient yields could be due to low soil fertility, but they could also be a result of problems such as planting at sub-optimal times, low rainfall, insufficient weeding and losses due to theft and damage from livestock. They could even be a result of growing demand. It is possible therefore, that 'insufficient yields' may also be the result of resource constraints and high risks in addition degradation processes. McAllister (1979) argues that the shift to garden cultivation effectively alleviates many of the resource constraints and risks that contribute to low yields, and allows rural households to maintain yields. However, intercropping together with higher manure application levels in gardens and the practice of situating of gardens on old kraal sites, ensure that soil fertility levels in gardens are better maintained. So the shift to garden cultivation alleviates soil infertility problems, but also alleviates resources constraints and reduces risks. Consequently, it is difficult to pinpoint low soil fertility as the main cause of the shift to garden cultivation.

Local residents identified damage to crops by livestock as a major obstacle for field cultivation, because fields are not fenced and are surrounded by communal grazing lands. They argued that this damage has become more of a problem over time and identified two reasons for this. As the number of children attending school increased, their involvement in the herding of livestock declined. Secondly, as fewer and fewer people continued with field cultivation it became more and more difficult for those remaining farmers to protect their fields and get the cooperation of their family and neighbours to prevent livestock from wandering onto their fields. When there were many people involved in cultivation, and large blocks of land under cultivation, there was a much broader consensus and collaborative effort to ensure that crops were protected. This community ethic has now broken down.

But what about the impact of shortages of labour and other resources on cultivation? To what extent was this a cause of the land use changes? Although only one respondent sited this as a reason, a close examination of the case studies shows that the death of a husband and absence of children were factors that coincided with the discontinuation of field cultivation in three of the six cases. However, when asked why they abandoned field cultivation, two of these respondents did not explain this as due to a lack of resources but due to an "old field not producing enough" or "damage to crops by livestock" as the main reasons. There was only one case (informant 3) in which a lack of resources and the inability of family and friends to provide assistance were sited as the major reasons for abandoning the field. On the surface therefore, there appears to be insufficient evidence from the interviews to argue that a shortage of productive resources (labour, oxen and finances) was the main cause of the abandonment of arable

fields and the shift to garden cultivation. In order to get more clarity on this it is necessary therefore to consult other sources of evidence.

The aerial photographic data provides some evidence that resource constraints may have played an important role in the shift to garden cultivation. As mentioned earlier, when households were grouped into wealthier and poorer categories, the data indicated that the shift to large gardens occurred earlier for poorer households than for wealthier ones. Heron's (1991) study of co-operative agricultural labour relationships in Nompá provides further substance to the argument that the abandonment of field cultivation was a result of resource shortages, particularly in cattle and labour. Heron found two forms of cooperative agricultural labour. Firstly, neighbourhood based work parties that undertake weeding, and secondly, kinship based ploughing companies. The use of these forms of cooperative labour was found to be essential in enabling households to maintain agricultural cultivation. Heron's household survey revealed that economic differentiation had a considerable influence on the ability of any household to access these cooperative relationships and maximise the benefits from them. Wealthier households were better able to recruit labour for work parties because they were able to offer more beer than poorer households. When it came to ploughing companies "people who contribute most cattle and implements to a ploughing company are usually its leaders. Being a company leader enables one to plough at optimum times because the other members of the company have to fall in with the leader's plans. As a result, wealthier household are able to obtain a greater return on their land" (Heron, 1991, pp. 49). The results of Heron's (1991) study showed that access to cattle was the most significant factor influencing the area of land cultivated by households. Livestock gives households manure and access to ploughing companies. Heron also found close correlations between the number of workers and area of land cultivated. However, livestock holdings were found to be more significant than availability of labour.

### **Market access issues**

Most agricultural economists would argue quite strongly that access to markets and market prices have a major influence of agricultural production (Low, 1984). One such economist, Steve Wiggins (2002), undertook a comparative analysis of 26 case studies of African farming. On the basis of this analysis he argues that "successful African farming depends first and foremost on market access and conditions on the demand side (demand for farm produce and the effects of economic policies on such demand), and in lesser part on supply side factors (access to capital, inputs and the ability of farmers to bear risk)" (Wiggins, 2002, pp 101). So is this an influencing factor in Nompá.

Bundy's (1979) analysis of the rise and fall of the African peasantry seems to verify Wiggins's (2001) argument. Bundy argues that high prices and the demand for cash earning (to purchase western goods and pay taxes) first lead to the rise of the African peasantry. This period was subsequently followed by a period of decline, due to economic changes that occurred in the white commercial farming sector and in

government policies that resulted in African peasants being out-competed and excluded from South Africa's agricultural markets (Bundy, 1979). However, interviews with the two former white traders and with Nompa residents indicates that trade in agricultural produce continued in Nompa until the late 1960s and 70s when the white traders started to leave. The volumes of maize sold by individual households were relatively small and depended on the extent of the harvest. Women would carry small bundles of maize to the white trading stations and exchange them for various consumer goods available in the store when they needed these goods. In good years, more frequent trips would be made to the store. The sale of maize therefore provided rural households with an opportunity to diversify household food consumption patterns and access other consumer goods without using cash. The loss of this livelihood option, with the departure of the white traders, may have discouraged or reduced the investment of scarce household resources in maize cultivation. However, this loss of access to agricultural markets was not cited by respondents as a direct cause of agricultural and land use changes. When respondents were specifically asked about this issue, they mentioned increased prices for inputs and the difficulties of obtaining credit as problems. The respondents said that the main agricultural products traded were livestock and livestock products such as wool and skins. The sale of maize was not a significant source of income.

However, the loss of market outlets for livestock products combined with the loss of access to credit, may have had an indirect impact on cultivation. The loss of revenue from livestock products, particularly wool, would have made it more difficult for local residents to invest in livestock (particularly oxen) and other inputs needed for cultivation. The loss of access to credit and other agricultural inputs would have had a negative impact on yields and brought forward the date of abandonment. The fact that most respondents seemed to have abandoned their fields soon after the departure of the white traders may therefore be significant. It suggests a possible link but the evidence remains inconclusive.

#### Shifting to garden cultivation

The other side of the coin however, is the growth in homestead gardens. The interviews clearly show that the expansion of gardens was a direct consequence of declining yields from fields and/or abandonment of fields. In each of the life stories, the establishment or expansion of gardens was linked by the respondents to declining yields from fields and/or the discontinuation of field cultivation. McAllister and De Wet's (1983) analysis of the differences between garden and field cultivation explain why the number and size of gardens has increased and why it is more viable than field cultivation.

Through field observations, participant observation and interviews with local residents, the key differences between field and garden cultivation that McAllister and De Wet (1983) highlight are summarised in Table 4 below. Firstly, gardens have been cultivated for a shorter period of time and are thus likely to be more productive than fields. The types of cropping practices employed in gardens and fields are also different and

these practices help to maintain soil fertility levels in gardens but not in fields. Only maize is grown in fields, whereas in gardens beans and other types of food crops are grown in-between the maize plants. The legumes help to maintain nitrate levels in the soil. The proximity of gardens to the homestead and livestock enclosures also provides advantages. This proximity makes it easier and less time consuming for residents to apply manure and to plough, weed and protect the garden. This makes garden cultivation more compatible with domestic tasks, which is particularly important because it is women who bear the burden of planting, weeding and harvesting the crops. Finally, gardens are fenced while

GARDENS	FIELDS
Close to the homestead – easier to protect, cultivate & manure	Distant from homestead – requires more labour and time
Fenced – protected from livestock	Unfenced – vulnerable to damage from livestock
Intercropping of maize, beans and other vegetables – helps to maintain soil moisture and fertility levels	Maize monoculture -
More fertile – due to intercropping and manuring (soil testing results). Many also created on sites of old livestock enclosures	Less fertile due to long periods of monoculture with insufficient fallow periods &/or application of fertilisers or manure
Flexible size – the location and size of gardens change	Fixed size and location

**Table 4: McAllister’s (1983) comparison of gardens and fields**

fields are not. This protective barrier and their proximity to the homestead significantly reduces the risk of crops being damaged by livestock or lost to theft. The cultivation of gardens therefore is a much less risky and time-consuming task, and also a much easier and environmentally sustainable undertaking (McAllister and De Wet, 1983). McAllister and De Wet (1983) argue that the change from fields to gardens was an attempt by local residents to maintain production and make the most effective use of dwindling resources to maintain livelihoods. This suggests that these changes are a response to poor yields, high risks and growing resource shortages such as labour, draught oxen, finances, etc.

## Conclusion

When visitors and outsiders see vast areas of land that were obviously cultivated in days gone by, now abandoned, the assumption is that crop production has declined, that rural people are no longer involved in crop production. We know that things in South Africa's African reserves have deteriorated as the population has increased, livestock numbers have declined and unemployment has increased. However, the analysis of the aerial photographs shows that farmers in Nompá did not just give up cultivation entirely. Instead, they changed their cultivation practices. They adapted. McAllister's (1979, 2000) research shows that this change was a change for the better. Homestead garden cultivation was found to be more productive, less risky, and more viable given the resource constraints faced by rural households. Rural households were better able to invest the necessary labour, time and physical inputs into garden cultivation than fields. Their location close to livestock enclosures and the adoption of intercropping practices also helped to maintain productivity levels in gardens. Gardens appear to be a more viable and sustainable cultivation option in the context of a growing population, male absenteeism, and shrinking livestock and financial resources. It is not surprising therefore that there has been phenomenal rise in the number and size of homestead gardens. It is just unfortunate that it has taken so long for outsiders to accept and recognise the value of garden cultivation.

One of the consequences of this failure to recognise the importance of this change in land use and circumstance, was that the imposition of betterment planning and villagisation limited and undermined the ability of most rural household to maximise the benefits of garden cultivation. Such planning restricts the size of gardens and prevents households from changing the shape and location of their gardens as they do in a scattered type of settlement pattern found in Nompá. In addition, betterment assumed a need for distant arable fields and effectively enforced this extensive land use pattern, in a situation where people needed to intensify cultivation practices as it became more and more difficult and risky to continue with extensive field cultivation.

Besides providing evidence of adaptation and intensification, the Nompá evidence also provides important insights into the causes of the shifts. When trying to examine the reasons for this change it becomes clear that the different sources of data point to different causes. The coincidence of land use change with population growth evident in the aerial photographic data suggests that rapid population growth during the 1960s and 70s was a major causal factor. The historical literature and archival material suggest that access to markets (for inputs and outputs) and labour shortages were significant causal factors but do not shed much light on the relative importance and impact of these causal factors. The local life histories proved to be very useful in revealing causes such as soil infertility and increasing risks associated with declining social capital not identified by the photographs or historical literature and documents. These life histories also attributed less significance to many of the factors identified in the historical literature and documents. However, we need to look at what people do as well as what they

say. The aerial photographic data showed that it was the poor households facing major resource constraints who were the first to shift to large gardens while the wealthier households were able to maintain field cultivation for much longer. Herons' (1991) survey of households in Nompa also highlights the importance of resource constraints, particularly access to oxen, in determining the area of land cultivated by households.

In conclusion, it is clear that the evidence does not point to any single factor as the cause of these shifts. Rather, a complex interaction of multiple factors is responsible. The most important ones include low soil fertility, resources constraints and high risks. The loss of access to markets and credit exacerbated the resource constraints and made it more difficult to overcome low soil fertility problems. In this way loss of access to markets became an indirect cause of the changes in cultivation practices.

### **Can we make generalisations from this case study?**

Nompa and Shixini are not very typical examples of communal areas. They are located in one of the few relatively high potential agro-ecological region of the country where dryland cultivation is viable. Unlike most other poor rural communities in South Africa's 'reserves', these areas have experienced relatively few externally imposed disruptions to local social relations and land use practices such as betterment planning and high levels on in-migration due to forced removals and farm evictions. They have stable populations with strong traditional land administration systems still in place. Consequently, they have lower population densities, less landlessness and more agricultural production taking place, than the large number of rural African communities in dryer (and possibly more degraded) areas that have been subjected to relocations, betterment planning and high levels of in-migration. Studies of other communities in the province indicate different levels of cultivation. In some areas such as the dryer and more densely settled areas of the Ciskei it is very difficult to find any households involved in the cultivation of fields or gardens (Ainslie, 1998; Manona, 1998). In other areas close to Nompa, Leslie Bank has found communities with higher levels of investment in the cultivation of fields (Bank, 2001).

Direct state interventions and variations in climate and other biophysical characteristics can explain a great deal of the variation in cultivation practices, but they cannot adequately explain the historical changes that have occurred. The value of the Nompa evidence lies in its ability to reveal the less obvious causes of changes in crop production. It shows that the better off areas have also experienced significant reductions in livestock numbers, area of land cultivated, agricultural productivity and engagement in the agricultural markets. These less obvious factors include natural population growth, the migrant labour system, market changes, degradation, resource constraints and risks on land use change. This allows us to look beyond direct state interventions such as forced removals and betterment planning to identify the major economic, social and environmental constraints to agricultural development and provide some pointers for future policy. We should not forget however, that direct state interventions in population

movements, settlements and land use have played a central role in the creation of densely populated, degraded and unproductive rural settlements in many parts of the reserves. It would be incorrect however, to attribute the current state of affairs in the reserves exclusively to direct state interventions. The Nompa experience shows that major economic, social, demographic and environmental changes have played a less visible but probably more significant role than the oppressive state polices mentioned above.

However, we should also guard against drawing the conclusion that the process of change in the Eastern Cape's communal areas is inevitably a negative linear process of decline. The Nompa case shows that not all the changes have been bad, some of them are significant improvements. A wider study of cultivation practices in South Africa's communal areas would also indicate that cultivation could expand again if circumstances permit. One example of such a case is the growth of sugar and timber outgrowing on old arable fields in Kwa-Zulu Natal (Vaughan, 2001). These are areas where the same processes of abandoning fields and shifting to garden cultivation have been taking place (Cross et al, 1996).

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