Obstacles to the Development of Transkei Agriculture

Gill Westcott

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1. Introduction

The object of this paper is to describe the results of a survey into agricultural methods and the underlying reasons for low productivity in the Transkei; it will also draw out the implications of the findings for various views as to why cultivation appears to be carried out in so desultory a manner. An accurate understanding is of course vital for the choice of programmes aimed at raising the economic status of the homelands.

1.1 The Problem

Transkei constitutes some of the most productive land in South Africa. It receives almost everywhere over 500mm rainfall; on the coastal belt this rises to 1 260mm, and towards the Drakensbergs, 1 900mm. The soil is largely of the rich podsolic type. The proportion of arable land is 19%, unusually high for South Africa and the central plateaux provide some of the best grazing land in the Republic.

Yet it is universally acknowledged that agriculture in the Transkei is extremely backward in its methods and yields fall far below the potential productivity of the land - or even that of poorer land in the Western Transvaal which produced an average yield of 4 075 lbs maize per hectare (about 20 bags of 200 lbs) over the period 1967-70. In contrast average yields in Transkei between 1964 and 1974 are recorded as being approximately 2.5 bags per hectare (see Appendix). A previous study in the Tsolo area showed yields to be about 5.8 bags per hectare in a good year and 2.6 bags in a poor one.

Grobler and others have maintained that the homelands could feed a population much larger than the present one through improved cultivation, though at present they are by a substantial margin net importers of food. Hobart Houghton has estimated that the Transkei could be made to support 1.5 million farming families on the basis of methods now being used on similar land in Asia. While it could hardly be thought desirable that the homelands should reach Asian densities of population - presumably with a corresponding level of poverty - it would indeed be a
substantial gain if even the present population could be supported at anything like an adequate standard of nutrition. As a result of the low yields obtained, with landholdings rarely larger than 4 hectares, a rather small proportion of family income is derived from agriculture. In the Tsolo area, about 42% of total income was provided by remittances from migrant workers. Only 16% came from cultivation, even in a favourable year, and usually the proportion was well below this. An estimated 11% was derived from livestock, products being valued as far as possible in local prices. Only 10% came from cash earnings within the Transkei and the remaining 20% was from pensions and grants. Although the standard pension was only R22.50 for two months, this was not infrequently the main source of income for a household. Overall the levels of living found in this sample were extremely low.

It would thus appear that there are very substantial gains to be made by improving the productivity of agriculture. As it accounts for about 43% of the Transkei's GDP, the impact on regional development would be considerable. Moreover, since a very substantial investment is required to create a job in the industrial sector, raising agricultural output is almost certainly a cheaper method of creating employment and income. Efforts have already been made in this direction, the provision of agricultural extension officers and the progressive implementation of betterment schemes replanning the use of pasture and arable land. However, despite two decades of these policies, productivity remains extremely low. Why?

Five Views on "Backwardness"
A number of theories have been put forward; each takes account of such different factors in the homeland situation that it seems better to describe all the views in their own terms and full contradactoriness, and then to draw out testable implications and see to what extent the data is consistent with each one. The views thus provide the framework for the design of a survey...
which is able to discriminate between them.

A. Traditionalism

Some feel that an inherent conservatism and inertia among cultivators is responsible for the failure to adopt more efficient methods, even though they would improve family living levels. Although methods of raising agricultural output are known cultivators do not care sufficiently about increases in income and consumption to take the trouble to implement them. This view is epitomized by the story of the African who, when shown by a demonstrator how to double the yields from his field, far from applying them the next season, was discovered sitting by his hut enjoying a sabbatical year; or by the statement of the BENBO Economic Revue for the Transkei that "The traditionally rural population are not motivated to achieve higher production, since they are mostly satisfied with a simple subsistence existence". Much of the literature on Xhosa society gives a very different impression; e.g. Monica Wilson, writing on the Mpondo, possibly the least westernized of all the Xhosa tribes, shows that although 'Red' families (i.e. those which prefer to retain a more traditional style of dress and ancestral customs) have lower expenses in terms of consumption goods, they too have aspirations to increase their wealth in cattle, which are a valued form of saving and the means to lobolo wives for the sons of the household. Nevertheless it is possible that traditional social arrangements might interfere with profit-maximizing behaviour traditional amongst western industrial enterprises. If this is the case the type of exhortation and education in techniques which the Department of Agriculture aims to provide would not be likely to have much impact.

A variation on this view attributes poor cultivation techniques to the traditional identification of fieldwork as women's work. A distaste among men for agricultural tasks is said to stem from the fact that in tribal society the role of men included the care of livestock (and these more as a repository of wealth
and status; this view too has been challenged\textsuperscript{14}, to defend the home and to take decisions, leaving to women the more menial chores of house, field and garden. If this division of labour remains an obstacle to progressive cultivation, progress may be achieved only by persuading men to take a more active role, or by the substitution of hoeing and other tasks by mechanised operations involving skilled jobs such as tractor-driving to which men may be more amenable. Otherwise progress is strictly limited by the time housewives are able to spend cultivating.

B. Malnutrition
In many developing countries it has been recognized that because peasants are themselves undernourished their capacity to produce food is in turn limited. In the Tsolo area it was found that the majority of households in the sample claimed to have incomes below that required for a nutritionally adequate diet for all its members of the type which they actually consumed (i.e. they were at or below about 60\% of P.D.L.\textsuperscript{15}). If so many people live below "subsistence", it is a question of importance how they live. In the case of the Transkei, and probably of other homelands as well, although there is often casual sharing and help from relatives and neighbours, the answer seems to be largely that they live less - they move less, do less work, play, creative activity; they think less (it is also probable that malnutrition adversely affects intellectual ability\textsuperscript{16}). They suffer from more disease while alive, and more die: mortality in the first two years of life in a location in the Tsolo area was found to be about 29\% of live births.\textsuperscript{17}

Thus a vicious circle between malnutrition and low food supplies exists. However, one may presume the motivation to increase production to be strong, and once the process has begun it should be self-enforcing.

C. Ignorance
Although improved methods and the results to be expected from them can often be gleaned from neighbours or discovered from
agricultural officers it is still likely that there is a degree of ignorance about the potential of the land, the causes for a decline in soil fertility and ways in which it can be prevented. To this extent further education would be the appropriate measure.

All the foregoing explanations presume that profitable opportunities do exist which it is within the power of cultivators to exploit. A substantial literature disputes that this is generally a valid presumption for peasant communities, and that they do usually adopt the optimum although allocation of resources open to them, i.e. they are economically rational. The last two hypotheses do not make this assumption.

D. Bottlenecks of key resources
A view presented by the cultivators themselves is that although they are aware of the value of certain practices, e.g. the use of chemical fertilizer, they do not have the resources to utilize them; cash would be particularly important here. This possibility should not be excluded on the grounds that men habitually spend relatively large amounts on alcoholic beverages and other inessentials. Questioning wives about their husbands' habits when home and observation suggest that for the vast majority of families such expenditure is a very small component (this may or may not be true of incomes spent by migrants in towns), and the financial requirements for ploughing and fertilizer are large in relation to the average monthly budget. If the cash constraint is important, credit policy becomes of vital interest. It should not be forgotten that trading stores, before many of them were taken over by the X.D.C., were often a source of credit for cultivation, a source which is no longer available.

E. Unprofitability
Unprofitability of agriculture may be ascribed to three possible causes:

(i) the decline in soil fertility;
(ii) the structure of incentives, as affected by institutional
factors such as the form of land tenure, the small size of holdings etc.

(iii) adverse conditions for marketing.

(i) There has been some deterioration of the veldt over the last 50 years as population densities increased without corresponding changes in farming techniques. However the Transkei suffers far less from soil erosion than the Ciskei, and does not appear to be at present overstocked\(^{19}\). The acute problem is the maintenance of soil fertility in the absence of either enough cattle for plentiful manuring or cash for fertilizer, under a monoculture of maize, beans and pumpkins. In the short run even the additional supply of fertilizer may be less profitable than other opportunities such as upgrading stock or educating children.

(ii) Perhaps the best known approach to the problem of homeland agriculture and the most influential is that of the Tomlinson Commission. Like some of the above arguments, their view suggests a lack of effective labour in agriculture, but for a different reason. The Commission felt that the arable holdings were typically too small to provide employment remunerative enough to compete with industrial jobs outside the homelands. Pre-war efforts at agricultural development had failed "not so much because of the inherent conservatism of the Bantu but chiefly because crop rotation, lay farming and similar practices essential to the maintenance and building up of soil fertility are not possible where the availability of land is insufficient to produce the food requirements of the population; nor is efficient stock farming possible under conditions of gross overstocking".\(^{20}\)

The form as well as the size, of landholding also affects the returns available from agriculture. Gilbert Rutman has argued, in his paper on the analogy between homeland deterioration and the 'urban blight' observed in industrial countries, that traditional forms of tenure, absence of leasehold agreements or a proper monetary price for land use result in an inappropriate resource pricing and distorted patterns of use, e.g. since the
holder pays no price for land there is no cost to him of leaving if unused. The costs of misusing the land are also reduced and private returns to socially optimal production techniques are too low, and the actual incentive structure misleads rational farmers into poor, and in the long run, destructive practices. The foregoing arguments involve the view that agricultural enterprise would not be lacking in African cultivators under propitious conditions, and there is some additional evidence for this. Bundy describes a period during the late 19th century when there existed a prosperous class of African peasant farmers in the reserves, responding to the opportunities presented by the cash economy. This class declined only after the Union, as the man/land ratio deteriorated and there was a corresponding increase in labourers seeking work in the Republic. This trend seems to have continued until the present day and there is evidence of a concomitant decline in agricultural income; e.g. in the Transkei between 1931 and 1951 the mean annual real income from farming of a family of five declined by 22%. One would expect part of the decline to be due to lower yields as well as to a smaller area cultivated per family, i.e. a falling off in investment in land took place (e.g. less manuring) which led to damage irreversible in the short run.

(iii) Bundy also attributes the decline in peasant production to changing market conditions: lower prices and increasing relative disadvantage in access to the market as areas of white farms began to be served by rail. The position of the trading store as monopolist and monopsonist in the location requires study. In short, five major factors have been listed; they are summarized in the Table below together with related circumstances would identify them in the field. It will be seen that crucial questions are whether there is a shortage of key resources (labour, capital, knowledge etc.) or whether deep-rooted social factors are operative.
**Chief obstacles to agricultural development:**

<table>
<thead>
<tr>
<th>Causes</th>
<th>Situation Resulting</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td></td>
</tr>
<tr>
<td>(a) Traditionalism</td>
<td>Profitable opportunities Present and known but unused. No lack of labour. No strong desire to change status quo. Little response to market.</td>
</tr>
<tr>
<td>(b) Male antipathy to cultivation tasks</td>
<td>As above, but lack of male labour and perhaps enterprise in farming decisions. Desire for better living exists and is met where possible in other ways.</td>
</tr>
<tr>
<td>B. Undernutrition</td>
<td>Medical evidence required, but sociological and economic indicators. Desire for better production coupled with apathy but no apparent lack of labour time.</td>
</tr>
<tr>
<td>C. Ignorance: lack of technical knowledge</td>
<td>Opportunities present but unknown. No lack of labour. Farming more successful where good extension services or example of white farms.</td>
</tr>
<tr>
<td>D. Bottlenecks of key factors</td>
<td>Profitable opportunities present but unused due to lack of capital outlay required, labour, oxen or other essential factor. Expect income to be correlated with yields.</td>
</tr>
<tr>
<td>E. Agriculture unprofitable (a) to individual but not to society</td>
<td>Incentive structure poorly reflects social costs due to land tenure system, distorted local prices. No market in land. Rational allocation or resources implies migration and/or neglect of land by main breadwinner, esp. on smaller plots.</td>
</tr>
<tr>
<td>(b) even with correct social pricing</td>
<td>Poor communications, low local prices and low soil fertility prevent surplus production for market. MP of labour appears low in both cases.</td>
</tr>
</tbody>
</table>

2. **METHOD**

In the survey it was decided to focus on cultivation rather than livestock because it was not possible to deal with both in a limited time, although it became apparent from the survey that
the care of stock was intimately bound up with successful cultivation.

**The Study Area and Respondents**

After preliminary studies a questionnaire was designed (see Appendix 1) and a field survey undertaken in three locations in the Tsolo district.

1. **Ntshiqo**. This is a rehabilitated area about 2 km from Tsolo village. All fields are of equal size, and the arable land fenced off from the grazing land which has been divided into camos. Agriculture is still carried on in a more or less traditional fashion.

2. **Ggaqhala**, fairly similar to Ntshiqo, is however on the border of the Transkei close to an area where white farms employ some of the inhabitants and where from whom technically advanced methods might be learned.

3. **Mjika** was similar to the other two but more fortunate than them in having an active agricultural officer.

The interpreter for the interviews was a well-educated local man of about 30 years of age, who was able to establish a good rapport with respondents.

The questionnaire was administered in December 1975 and early January 1976 while planting and early hoeing were taking place. Respondents were visited again, some during the season, and all in May and June, by which time field samples could be taken to estimate the yield of maize. The method of estimation is given in Appendix 11. The success of other crops was noted, but in this year the bean and pumpkin crops were almost a total failure from the exceptionally heavy rain.

Table 1 shows that the majority of farmers had no education above Standard IV. The highest level of education was in Mjika where 54% of the respondents had exceeded this level. Overall only 30% of the respondents were men, and of these some were on annual leave.
Table 1: Background of Respondents

<table>
<thead>
<tr>
<th></th>
<th>Gqaghala</th>
<th>Ntshiyo</th>
<th>Mjika</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total no. of respondents:</td>
<td>33</td>
<td>44</td>
<td>33</td>
</tr>
<tr>
<td>men</td>
<td>10 (30%)</td>
<td>19 (43%)</td>
<td>4 (12%)</td>
</tr>
<tr>
<td>women</td>
<td>23 (30%)</td>
<td>25 (57%)</td>
<td>29 (88%)</td>
</tr>
<tr>
<td>Education above St. IV</td>
<td>9 (27%)</td>
<td>4 (9%)</td>
<td>18 (54%)</td>
</tr>
<tr>
<td>Education above J.C.</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

3. RESULTS

3.1 Existing Methods

The traditional 'ideal' pattern of cultivation requires oxen not only for ploughing (two or three times was said once to be not unusual) but for planting, scoffeling, carting the harvest home from the fields, carting manure to the fields again and ploughing after harvest. It is not clear to what extent this ideal was realised, but descriptions of prosperous peasant farmers in the Transkei (C. Bundy, 1972) about the turn of the century, competing successfully with white farmers suggests that they must have been masters of a technology based on oxen.

It would appear that Xhosas are not inept at agriculture, but that they have failed to keep up with changes in technique, to remain efficient over the last three quarters of a century. The reasons for this may be sought partly in changing economic and legal conditions over that period and deserve separate study, although the structural determinants of the present situation provide part of the answer.

Thus cattle were the mainstay of families farming in this district. Those unfortunate enough to possess no oxen could normally borrow a team from neighbours, as would those who had too few to make up a full ploughing team.

The present situation has to be seen in contrast to this 'ideal'. The main change is that now most families hire tractors. This began when a very large proportion of cattle perished in drought...
and epidemics over the last few years; furthermore, the lateness of the rain and weakness of oxen when it arrived often led people to prefer the speedier method. Ploughing is normally done in October, but in the last six years it has been delayed all too often until December. The vast majority plough only once now because there are too few tractors and because of the expense. About 10% of fields were not ploughed at all this season.

Table 2: Cultivation Methods

<table>
<thead>
<tr>
<th>No. ploughed this year</th>
<th>Gqaghala</th>
<th>Ntshiqo</th>
<th>Mjika</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ploughed after harvest</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Ploughed using:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tractor oxen</td>
<td>25¹/</td>
<td>33</td>
<td>21¹/</td>
<td>79(92%)</td>
</tr>
<tr>
<td>Fertilizer, no. using:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.3 (superphosphate)</td>
<td>25(93%)</td>
<td>27(77%)</td>
<td>10(42%)</td>
<td>62(72%)</td>
</tr>
<tr>
<td>N.P.K. mixtures</td>
<td>2(7%)</td>
<td>3(9%)</td>
<td>7(29%)</td>
<td>12(14%)</td>
</tr>
<tr>
<td>Growmor</td>
<td>-</td>
<td>4(11%)</td>
<td>11(46%)</td>
<td>15(17%)</td>
</tr>
<tr>
<td>None</td>
<td>-</td>
<td>1(1%)</td>
<td>-</td>
<td>1(1%)</td>
</tr>
<tr>
<td>No. using + 1bg/acre</td>
<td>22(81%)</td>
<td>3(9%)</td>
<td>8(33%)</td>
<td>33(38%)</td>
</tr>
<tr>
<td>No. using + 2bgs/acre</td>
<td>2(7%)</td>
<td>-</td>
<td>-</td>
<td>2(2%)</td>
</tr>
<tr>
<td>Manure:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. using 1 bg/acre</td>
<td>15(56%)</td>
<td>25(71%)</td>
<td>22(92%)</td>
<td>62(72%)</td>
</tr>
<tr>
<td>No. using 2 bgs/acre</td>
<td>4(15%)</td>
<td>1(3%)</td>
<td>16(67%)</td>
<td>21(24%)</td>
</tr>
<tr>
<td>No. using hybrid seed</td>
<td>1(4%)</td>
<td>1(3%)</td>
<td>4(17%)</td>
<td>6(7%)</td>
</tr>
</tbody>
</table>

¹/Some used both

Families usually use their own seed (see Table 2 above). The advantages of good seed are well recognized; some families have kept their seed for years and their strain is valued and bought by the community. The trouble with hybrid seed is that it must be renewed each year, and is therefore regarded as being something of a swindle.

Planting is done with oxen, the seed usually mixed with both fertilizer and kraal manure. Most cultivators used superphosphate at a rate not greater than one bag per acre, except in Gqaghala where 81% used more (see Table). The recommended rate is about 2 bags. Over half used more than one bag of kraal manure.
While the plants are small oxen are used again to scoffel (a process equivalent to harrowing) to keep down weeds. Hoeing follows, until the time when the mealies are large enough to deter the growth of weeds. By this time, too, the beans and pumpkins which are usually planted in the same row as the mealies will cover the ground, so hoeing becomes impossible. Fresh cobs - 'green mealies' - should be available in February of March in normal years, but the mealies are not harvested until June, by which time they are thoroughly sun-dried and keep well. The harvest is then carried home in ox-drawn sledges or by tractors. A few families then put manure on their fields and plough it under, but the weakness and inability to borrow oxen for this purpose usually preclude it. The cattle are then turned onto the land to graze the mealie stocks.

3.2. Avenues to Improvement

Certain possibilities for raising production were explored to examine the reasons for their not having been adopted. These changes appeared at first sight to be within the reach of many farmers but were rarely all practiced.

1) Plough all of the field (a majority of people in Mjika and Gqaghala did not do this) and plough earlier.
2) Use more fertilizer and manure.
3) Plough more often and cultivate more thoroughly.
4) Use hybrid seed and insecticide for plant pests.
5) Plant more profitable crops.
6) Winter cropping.
7) Vegetable gardening.

The answers given by cultivators themselves appear below.

Table 3: Reasons for Not Ploughing

<table>
<thead>
<tr>
<th></th>
<th>Gqaghala</th>
<th>Ntshiqo</th>
<th>Mjika</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cost of ploughing (and of fertilizer)</td>
<td>13</td>
<td>4</td>
<td>11</td>
<td>28</td>
</tr>
<tr>
<td>2. Availability of tractor</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>3. No-one to work field</td>
<td>1</td>
<td></td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>4. Heavy rain</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>5. No field</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>6. Other</td>
<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>20(61%)</td>
<td>12(27%)</td>
<td>28(85%)</td>
<td>60(55%)</td>
</tr>
</tbody>
</table>
55% of the sample failed to plough some or all of their land. The proportion was lower in Ntshiqo, which is a rehabilitated area and where all the fields are 5 acres, than in the other locations where the average size of holdings is much larger.

The most important reason for not ploughing was financial. (The cost of a tractor ranged from about R6 to R10 per acre in the 1975-6 season. Owners who will plough on credit generally charge more.) Some of those who reported that they were prevented from ploughing by heavy rain in late November and December would have been able to plough before had they had the money to hire a tractor earlier. Sometimes the son or husband who worked away had failed to return or to send the money for ploughing time. In general, although tractor charges were uniform, it was the richer families who ploughed first and obtained an advantage for the season.

In one location the breakdown of the only local tractor also led to delayed ploughing.

Most of those who did not plough had no oxen with which they could have done so. One or two in this situation had borrowed oxen, but it was more usual to borrow money for a tractor for relatives (or for the deposit), because this has the advantage of speed and of not requiring the help of a man. In other words, although lack of labour was not a prominent reason for not ploughing, a large proportion of families who did not cultivate would have run into problems later on had they ploughed. It was also found (see Table 6) that area ploughed varied considerably with the amount of labour available.

The reasons for not ploughing earlier are very similar to those for not ploughing at all, except that a large number said that it had not rained sufficiently to plough at the usual time.
3.2.2. Table 4: Reasons for not using more fertilizer and manure

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>'Doesn't improve crop much; 'puts plenty':</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Crop good enough, 'sufficient'.</td>
<td>2</td>
<td>5</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>Lack of money</td>
<td>26</td>
<td>1</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>Unavailable</td>
<td>-</td>
<td>10</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Harmful to put some/more</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Carting difficulty</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>No answer, or not recently ploughed</td>
<td>4</td>
<td>6</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td>33</td>
<td>44</td>
<td>44</td>
</tr>
</tbody>
</table>

The vast majority felt that fertilizer was beneficial and they would have liked to use more had they been able to afford it. The reasons for not using more manure were somewhat diverse. A great many, particularly in Ntshiqo felt that they used enough (the amounts given ranged from 4 to 8 bags over 5 acres). As this was the location where people revealed the least agricultural ambition the reply seems to indicate a 'satisficing' response, that yields were acceptable at the present level. However this reply may also conceal an awareness that, when combined with fertilizer in any quantity and administered with the seed at planting, the manure is hot and prevents the seeds making full use of the fertilizer. Five explicitly stated that more manure than they used was harmful, one adding the rider 'when it is mixed with fertilizer'. Two thought it encouraged cutworms.

Unavailability of manure was also important, mainly for those who had no cattle and were allowed to take limited quantities.
from another kraal. However a few used all their manure and still thought it was not enough.

3.2.3 Hoeing and Scoffeling

The main limit on cultivation this year has been the wet weather. Scoffeling is restricted by lack of oxen (see Table 5 below), and of menfolk: small boys of 9 or 10 are often seen behind the oxen.

Most women said they hoed every day, weather permitting (except Sunday - even the blanketed women). The strength, age and number of women were clear limits on whether they could finish hoeing the field even once, unless the family was rich enough to hire neighbours to help. Wages were paid by the yard, and averaged about 50c per day.

Table 5: Ownership of Oxen

<table>
<thead>
<tr>
<th></th>
<th>Gqaghala</th>
<th>Ntshiqo</th>
<th>Mjika</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of families possessing:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>oxen to plough (4-6 &amp; over)</td>
<td>6</td>
<td>4</td>
<td>8</td>
<td>18 (17%)</td>
</tr>
<tr>
<td>oxen to scoffel (1-4)</td>
<td>12</td>
<td>10</td>
<td>11</td>
<td>33 (32%)</td>
</tr>
<tr>
<td>no oxen</td>
<td>12</td>
<td>27</td>
<td>13</td>
<td>52 (50%)</td>
</tr>
<tr>
<td>no access to oxen</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>41</td>
<td>32</td>
<td>104</td>
</tr>
</tbody>
</table>

3.2.4. "Technological inputs"

Only 6 respondents used hybrid seed. There was much ignorance about them, but those who did know of them felt they were expensive (about R9 per bag), did not 'last more than two years, and, in Gqaghala and Mjika involved a long expensive bus journey to the co-operative in Tsolo. Had they been available in the shops it is probable that use would have been much greater. It was significant that there were more users in Mjika, where the agricultural officer provides a link with the co-op. However there is still much suspicion concerning the co-op due to malpractices some years ago in which many cultivators
suffered losses.

Little 'technological know-how' was passed from white to Transkei farmers, except for the very richest of these. No doubt the lack of interchange was due to the extreme difference in resource endowments which meant that techniques practicable in one situation were not in the other.

Great benefit would be derived from the more ready availability of pesticides. These were used regularly only in Mjika where they were sold in the shops, but after the withdrawal of DDT from the market, shopkeepers in the other two locations have not begun to stock a substitute. There was great interest among farmers in obtaining these.

3.2.5 Winter Cropping
Because of the system of turning cattle onto the lands after harvest it is necessary to fence one's field in order to plant in winter. Apart from the usual financial difficulties there was an attitude in Ntshiqo and Mjika which tended to deter individuals from fencing their fields, regarding others' cattle from their habitual grazing. It has happened more than once that the fences are torn down when a crop of wheat has been planted and cattle let in at the usual time. This attitude was less in evidence at Gqaqhala, where some farmers grew wheat in fenced fields or in gardens which had been made stockproof. However even here, wheat-growing has diminished in recent years, partly owing to the lack of threshing facilities. The lateness of the mealie crop in these years has also prevented the planting of wheat.

For the most part winter crops could only be grown in stockproof gardens, which were owned only by a minority. In Gqaqhala, potatoes were popular and were sold at good prices to a visiting merchant; peas were also grown. Cabbage, onions and tobacco were occasionally found as a winter crop.

Fodder crops were mentioned only by two farmers in Gqaqhala,
and these no longer grew them. The problems were similar to those for wheat.

3.2.6. Vegetable Gardening

'Garden does not aptly describe the small field which every kraal head would like to have in front of his home. It is typically one or two acres in size and planted with maize, beans and pumpkins, with a few vegetables in one corner. Vegetables are increasingly valued in all three locations, which have been subject to education on the subject from the hospital health educators and, in Mjika, the agricultural officer as well. They are particularly successful at Mjika, but are almost always grown only for family consumption. Some sell to neighbours, but complaints were made about the lack of a market for surplus vegetables.

The main obstacles are:

(i) The expense of making a stockproof garden. (Nevertheless a small vegetable garden need not cost much).

(ii) Winter drought is a frequent occurrence.

(iii) Some have failed in one attempt through adverse weather or cutworms and require encouragement to try again.

(iv) Lack of seed in the shops.

It is interesting that in Mjika most of the growers were women, teaching is given by the agricultural officer through the Zenzele (self help) movement. In Gqaghala the most successful were men, some of whom had worked elsewhere in market gardens and had acquired the interest and knowledge; they grew to sell, or to pay their helpers at harvest. Teaching therefore seems to have been an important factor in motivating vegetable gardening.

3.2.7. More profitable crops

People do not consider the selling prices of crops when they plant, with the possible exception of peas, potatoes and tobacco which can be sold locally. Mealies are grown 'because they are our staple food', and people are security oriented enough to want to be sure of as much as possible of their basic food. The buying price of maize, and in some cases the sources of cash income are uncertain, and in any case most incomes are too
small to spend on experiments which might not come off. The purchase of fertilizer is probably also affected by this increase in loss if the harvest should fail. A slight degree of insurance is provided by planting beans, pumpkins and sometimes Amazimba (kaffircorn), but these also are grown only in the proportions the family only want to consume.

If anything, the price of crops other than mealies may exert a negative influence on the amount grown. Some poorer families said they grew fewer beans this year because they could afford less seed now the price had risen so much.

Nevertheless there are hints that some idea of marketability does enter the calculations; several respondents said they would have grown more Amazimba had they been able to sell it. Maize, as well as being the staple food, is easily saleable, in small or large amounts in time of need, and although people rarely have a surplus and do not like to sell their mealies it was learned from shopkeepers that they did.

3.3 Production
Respondents had reported the yields they would expect in a normal year if the rains were moderately good. Both these and our own estimated yields are given in Table 3.
Table 3: Average yields, value of output and net income per acre

<table>
<thead>
<tr>
<th>Location</th>
<th>Normal Year&lt;sup&gt;2&lt;/sup&gt;</th>
<th>1975 / 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Av. yield maize (bags/acre)</td>
<td>Av. value output (R) per acre</td>
</tr>
<tr>
<td>----------</td>
<td>------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Gqaghala</td>
<td>3.5</td>
<td>31.3</td>
</tr>
<tr>
<td>Ntshiqo</td>
<td>2.0</td>
<td>20.9</td>
</tr>
<tr>
<td>Mjika</td>
<td>2.6</td>
<td>22.5</td>
</tr>
<tr>
<td>Totals</td>
<td>2.62</td>
<td>24.8</td>
</tr>
</tbody>
</table>

1. Figures in kg/hect are given in Appendix IV.
2. Fields only were studied for 'normal' year.
3. Including value of beans, pumpkins and sorghum planted with maize.
4. Value of output, less a standard cost for ploughing and fertilizer and any other bought inputs.
Table 4: Immediate Inputs: Production Relationships

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Constant</th>
<th>Independent Variables</th>
<th>Coefficient of determination</th>
<th>Variables found insignificant</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \log B_n )</td>
<td>1.04</td>
<td>0.4484 ( \log F )</td>
<td>0.7826 ( \log P_l )</td>
<td>.9777 Times hoed; bags manure; times scoffled.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( \text{significance level (.0000)} )</td>
<td>( \text{(0.0000)} )</td>
<td></td>
</tr>
<tr>
<td>( \log V_n )</td>
<td>3.30</td>
<td>0.2525 ( \log F )</td>
<td>0.0836 ( \log M ) + 1.3780 ( \log P_l )</td>
<td>.9710 Times hoed; times scoffled; hybrid seed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( \text{significance level (.0000)} )</td>
<td>( \text{(0.0136)} )</td>
<td>( \text{(0.0087)} )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( \text{(0.0000)} )</td>
<td>( \text{(0.0000)} )</td>
<td></td>
</tr>
</tbody>
</table>

Significance level of .01 indicates that there is a 1% chance of there being no relation between the dependent and independent variable. A level of .0000 indicates there is no chance that there is no relationship.

Where \( B_n \) = bags maize per acre, normal year \( F \) = bags fertilizer \( M \) = bags manure
\( V_n \) = value of output per acre, normal year \( P_l \) = times ploughed

No significant independent variables could be found for yield or output in 1975 / 6.
Table 5: Explanatory Variables: Regressions

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Constant</th>
<th>Independent Variables</th>
<th>Coefficient of determination</th>
<th>Variables found insignificant</th>
</tr>
</thead>
<tbody>
<tr>
<td>$B_n$ = 1.2737 + 0.1130 $Y$ - 0.0049$L/a$ + 0.4718$A$ + 0.1815$X$</td>
<td></td>
<td></td>
<td>0.4260</td>
<td>(area owned)-(area cultivated); education</td>
</tr>
<tr>
<td>Sign. level (.0024) (0.0907) (0.0000) (0.0024) (0.0254)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$V_n$ = 12.8235 + 1.3657 $Y$ - 0.0451$L/a$ + 4.6874$A$</td>
<td></td>
<td></td>
<td>0.3875</td>
<td>(area owned)-(area cultivated); no. of oxen; education</td>
</tr>
<tr>
<td>Sign. level (.0016) (0.0284) (0.0000) (0.0017)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where $L/a$ = no. of family members available for work in field, per acre.  
$A$ = able man permanently at home (ie. not schoolchild, invalid or pensioner)  
$X$ = no. of oxen  
$Y$ = household income

1. No. of acres is a significant variable when tested with no. of family members(L) as such, separately, in the same equation. However the combination of these two variables increases the coefficient of determination and creates a highly significant variable.

2. For definition and classification of income, see Appendix II.
Table 6: Income class, Yields and Total output of Maize

<table>
<thead>
<tr>
<th>Income class</th>
<th>Estimated Income Range (R.p.m.)</th>
<th>Gqaghala</th>
<th>Ntshigo</th>
<th>Mjika</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. cult</td>
<td>bgs/ acre</td>
<td>Av. total</td>
<td>Av. No. acres</td>
</tr>
<tr>
<td>I. No supper in kraal, maybe help from Transkei relatives</td>
<td>0-10</td>
<td>2</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>II. 1 pension, 1 female migrant worker, son in nearly kraal or negligent migrant support</td>
<td>10-15</td>
<td>5</td>
<td>2.6</td>
<td>2.5</td>
</tr>
<tr>
<td>III. Support from 1 migrant</td>
<td>15-20</td>
<td>9</td>
<td>2.7</td>
<td>3.2</td>
</tr>
<tr>
<td>IV. 1 migrant worker +1 pension or 2 migrants</td>
<td>20-25</td>
<td>8</td>
<td>6.3</td>
<td>3.5</td>
</tr>
<tr>
<td>V. Two migrants, or husband in local employment (plantation, roadworks) returning weekends</td>
<td>3</td>
<td>3.7</td>
<td>2.8</td>
<td>9.7</td>
</tr>
<tr>
<td>VI. Main breadwinner is Over builder, witchdoctor, 40 stock farmer (-100 sheep), teacher clerk or other professional</td>
<td>3</td>
<td>8.7</td>
<td>4.43</td>
<td>40.8</td>
</tr>
</tbody>
</table>
Table 6:

1. See Appendix II for method of estimating income.

2. Those cultivating for the first time are omitted

3. Unweighted average of yields achieved by different cultivators.

4. No field is larger than 5 acres but some extended families have more than one field.
Table 7: Available labour, yields and output

<table>
<thead>
<tr>
<th>Labour class of family</th>
<th>No.</th>
<th>Not ploughing cultivated</th>
<th>Acres</th>
<th>Fertilizer bags/acre</th>
<th>Av. no of times</th>
<th>Av. cost/acre</th>
<th>Av. yield/bags</th>
<th>Total product (bags)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gqaghala</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>8</td>
<td>3</td>
<td>2.4</td>
<td>3.0</td>
<td>1.3</td>
<td>1.0</td>
<td>13.9</td>
<td>2.6</td>
</tr>
<tr>
<td>B</td>
<td>5</td>
<td>-</td>
<td>3.8</td>
<td>2.1</td>
<td>1.2</td>
<td>1.0</td>
<td>15.7</td>
<td>3.9</td>
</tr>
<tr>
<td>C</td>
<td>9</td>
<td>2</td>
<td>3.7</td>
<td>1.9</td>
<td>1.2</td>
<td>1.1</td>
<td>10.5</td>
<td>2.8</td>
</tr>
<tr>
<td>D</td>
<td>5</td>
<td>-</td>
<td>4.8</td>
<td>1.6</td>
<td>1.4</td>
<td>0.8</td>
<td>18.4</td>
<td>3.5</td>
</tr>
<tr>
<td>E</td>
<td>5</td>
<td>-</td>
<td>7.6</td>
<td>2.3</td>
<td>1.2</td>
<td>1.0</td>
<td>13.0</td>
<td>3.7</td>
</tr>
<tr>
<td>Total</td>
<td>32</td>
<td>5</td>
<td>4.2</td>
<td>2.2</td>
<td>1.1</td>
<td>1.0</td>
<td>13.8</td>
<td>3.2</td>
</tr>
<tr>
<td>A.M.</td>
<td>5</td>
<td>-</td>
<td>8.6</td>
<td>2.6</td>
<td>1.7</td>
<td>1.0</td>
<td>12.5</td>
<td>4.6</td>
</tr>
<tr>
<td>Ntshigo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>9</td>
<td>3</td>
<td>3.3</td>
<td>1.8</td>
<td>1.2</td>
<td>0.9</td>
<td>7.9</td>
<td>1.6</td>
</tr>
<tr>
<td>B</td>
<td>11</td>
<td>2</td>
<td>3.6</td>
<td>1.9</td>
<td>0.9</td>
<td>0.9</td>
<td>8.2</td>
<td>1.5</td>
</tr>
<tr>
<td>C</td>
<td>12</td>
<td>2</td>
<td>4.6</td>
<td>1.5</td>
<td>1.3</td>
<td>1.1</td>
<td>7.2</td>
<td>1.7</td>
</tr>
<tr>
<td>D</td>
<td>10</td>
<td>2</td>
<td>4.0</td>
<td>1.6</td>
<td>1.3</td>
<td>1.0</td>
<td>7.5</td>
<td>2.2</td>
</tr>
<tr>
<td>E</td>
<td>2</td>
<td>0</td>
<td>12.5</td>
<td>1.7</td>
<td>1.5</td>
<td>1.0</td>
<td>10.5</td>
<td>2.4</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
<td>9</td>
<td>4.8</td>
<td>1.6</td>
<td>1.2</td>
<td>1.0</td>
<td>7.9</td>
<td>1.9</td>
</tr>
<tr>
<td>A.M.</td>
<td>14</td>
<td>2</td>
<td>5.7</td>
<td>1.5</td>
<td>1.3</td>
<td>1.0</td>
<td>7.7</td>
<td>2.1</td>
</tr>
<tr>
<td>Mjika</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>13</td>
<td>6</td>
<td>2.6</td>
<td>1.8</td>
<td>1.1</td>
<td>.92</td>
<td>9.8</td>
<td>2.1</td>
</tr>
<tr>
<td>B</td>
<td>7</td>
<td>3</td>
<td>3.6</td>
<td>3.5</td>
<td>2.0</td>
<td>1.5</td>
<td>15.2</td>
<td>3.0</td>
</tr>
<tr>
<td>C</td>
<td>6</td>
<td>3</td>
<td>3.0</td>
<td>2.4</td>
<td>1.0</td>
<td>1.0</td>
<td>12.6</td>
<td>2.8</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>5</td>
<td>5.5</td>
<td>3.0</td>
<td>1.5</td>
<td>1.0</td>
<td>5.6</td>
<td>2.8</td>
</tr>
<tr>
<td>E</td>
<td>3</td>
<td>1</td>
<td>6.5</td>
<td>4.3</td>
<td>1.8</td>
<td>1.0</td>
<td>9.3</td>
<td>3.0</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td>10</td>
<td>4.5</td>
<td>3.7</td>
<td>1.7</td>
<td>1.1</td>
<td>10.73</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Classification: A = 1 family member also employed or caring for family; B = 1 full time or 2 part time (eg. woman + 15 yr old school child) C = 2 full time (may include non-schooling child or old woman) D = 3 family members (may include 1 older child at school) E = 4 family members or more. A.M. = able man permanently at home.
Average yield for 1975/6 is given only for those fields in which some crop was harvested, and for the area actually reaped. The season was, however unusually wet and the fields rapidly became waterlogged. Those who had planted at all often found it impossible to cultivate the crop, with the result that it was swamped in a lush growth of weeds. Thus 54% of fields planted in the previous year bore no crop at all, and about 50% of the others was successful. While the above figures are most comparable to those for a 'normal' year, the actual crop was about one quarter of what they suggest. In Mjika only 5 of the sample of 33 had a measurable harvest, although Gqaqhala, the driest of the three locations, experienced a moderate result and some did better than normal. There is no way that this year's yields could give an accurate guide to normal yields, but it is felt that this selective inclusion comes closer to representing average yields than a measure which included all the crop failures. The figure so obtained may be biased upward or downwards.

3.4 Factors affecting production

Variables were divided into two kinds, "immediate" inputs and "explanatory" variables. Immediate inputs were seed, chemical fertilizer, manure, times sowed and hoed; for the last season planting time was also known. Linear and log linear (i.e. Cobb Douglas) forms of production function were fitted by stepwise regression. The latter form was preferred, and final equations are given in Table 4.

Explanatory variables were taken to be education, income, family labour available, acres owned, the presence of an able man permanently at home, and ownership of oxen. The difference between acres owned and acres cultivated was also used experimentally as a variable; it was felt that this might be related to the keenness of the cultivator as well as to variables such as income and labour resources. This variable correlated significantly only with the 'able man' factor, but was found to be insignificant as an explanatory variable for
yield or the value of output.

Education was found to have a negative coefficient, though insignificant, although some of the more successful cultivators were teachers. Some women themselves suggested that education tended to reduce interest in cultivating the fields, and this seemed a possible response. It is perhaps more relevant that practical agriculture was not until relatively recently a school subject and as such still has low status. The high performance of teachers is adequately accounted for by their high incomes and in the case of main breadwinners, the fact that they have not needed to migrate to find a job.

3.4.1. Income as a determinant of agricultural output

Income was significant in both explanatory equations. Table 6 shown that in Gqaghala and Ntshiqo, both yield and average area cultivated increase with income, whereas in Mjika only the acreage showed any clear trend. It is interesting that while total income was a significant variable in the yields equation it was not so when divided by the number of acres cultivated.

3.4.2. Labour as a determinant of output

Families were classified according to the number of family members available for agricultural tasks. This was ascertained where there was doubt by directly questioning the respondents. Table 7 shown that no strong influence on yield is discernible (labour per acre has a slight, but highly significant negative coefficient!) but there is a marked increase in the area cultivated with the number of family members available. There is no corresponding increase in the other inputs on a per acre basis when family labour increases. The averages for those families where an albe man was permanently at home were also calculated, and both yields and acreages are very much
higher than average for this group.

"Family members per acre" was a highly significant variable in the equations for yield. The coefficient was extremely small and negative. Thus, for the same land area cultivated, the presence of an additional family member made virtually no difference to output. This could mean either that the marginal product of labour is zero (suggested also by the fact that hoeing and scoffeling, the main components consisting of labour but no other factors, do not have significant coefficients among the 'immediate inputs'; alternatively the low 'labour per acre' coefficient could mean that a conventional amount of work is done in the field regardless of the number of people available to do it. In general the former interpretation seems more likely. Amount of labour therefore does not affect yield per acre, but does influence total income from land through its effect on area cultivated.

3.4.2. Presence of a man at home
This was a significant variable in both explanatory equations. It is interesting, however that where the number of able men present at home is divided by the number of acres cultivated the coefficient is insignificant. In other words it may not be the actual addition to the amount of labour which is the crucial influence when a man is present but some factor which increases no matter how many acres are cultivated. Entrepreneurial yield ability or ability to make decisions about money while in close touch with the agricultural situation would be factors of this kind. The influence of a man's presence on the value of output per acre appears to be of a much higher order of magnitude than on yield in terms of bags of mealies only; and this supports the hypothesis that the entrepreneurial role a man is able to take when at home is important.

Again the effect on number of acres cultivated is also highly
significant.

The final equation is:

\[ N = 1.1175 + 0.8735A + 0.4613ON \]

Sign. level (.0763) (.0095) (.0000)

Where 
\[ N = \text{no. of acres cultivated} \]
\[ ON = \text{no. of acres owned} \]
\[ A = \text{no. of able men at home} \]

No. of oxen, amount of labour, education and income were eliminated in that order.

3.4.4. Productivity of factors

Where the production function is \[ Q = AB^C \], where B and C are factors, marginal product of B is given by the formula

\[ MP_B = \frac{\partial Q}{\partial B} \]

The marginal product of a bag of fertilizer costing R3.80 was found to be worth R7.06, that of an additional ploughing costing about R7.00 was R30.74. Because of the tremendous discontinuities in the input ploughing (it can be done either once, or twice) and the large capital input it is not surprising that marginal value produced in the 'normal' year is so much in excess of the cost.

Rationality in a world of certainty would require the use of factors to the point where marginal product is equal to price. However in a world of uncertainty, where cultivators are risk averse, this is not so, and Wolgin\textsuperscript{25} shows that marginal product must normally exceed prices. "Irrationality" in the economic sense can only be proved if marginal product is less than the price of the input. It is thus impossible to say in the case of Transkei cultivators, whether their use of fertiliser is irrationally low (or low due to ignorance), given their degree of risk aversion.

4. DISCUSSION

It is now possible to assess some of the arguments given at the beginning of the paper.

The view that traditionalism is responsible for backwardness
does not sit comfortable with the observation that, contrary to being content without additional cash income, most families are so badly in need of cash that the main breadwinner has no choice but to seek work in towns. Aspirations are certainly more limited than among townsfolk, but there is good reason to think that this accurately reflects the limited possibilities open to rural folk and is a necessary adjustment to it.

This is how I interpret the feeling of demoralization which one often encounters in speaking with poorer families; they may laugh about their 'laziness' in not cultivating their field, or evade the point by saying they may still do so. But it is painfully obvious that they have little means of ploughing.

The variable it was thought might show variations in keenness (uncultivated) did not have independent explanatory power. Undoubtedly there were variations in the keenness with which families approached cultivation, but it was striking how attitudes tended to correspond broadly with the ability to cope with the demands of existing methods. Those families who were struggling to stay alive, and those who were dependent on relatives had low morale and far less interest in hearing of new methods than were those who had some surplus in terms of cash or energy over their immediate subsistence requirements. Several widows who had once been comparatively well off tried to maintain their standards of cultivation in harder circumstances, ploughing a smaller area, but still with relatively good yields. A few women at the bottom scale were making determined efforts with tobacco patch or a small vegetable garden, but a woman without support would almost always be out at work in this situation leaving her field unploughed. (It would be possible for her to "isahlulo" ie. enter into a sharecropping arrangement whereby another person would plough and take half the crop. But there are apparently many woman seeking such an arrangement and few takers) On the other hand there were a
few families who did not take much trouble with the field, particularly kraals headed by the young wife of an absent husband (without the guidance of a mother-in-law) or elderly people supported by their children in a separated kraal. With these few exceptions the success of the crop was a matter of great concern; the most enthusiasm was shown by those who were well off.

By and large, it did not seem, from my limited observations, that there were many customs or practices which directly inhibited agriculture. Men were found hoeing, and women using oxen to plant and scoffel. Women certainly do more of the field work than men, but no active man was found at home who did not take part in agricultural operations. The main exception to this was the turning of cattle onto the fields after harvest, which prevents winter cropping. This may indeed be a rational procedure for those who, for some reason, cannot grow two crops. Yet there is a prejudice, as well as an almost prohibitive cost, to fencing one's own field to grow winter crops, in at least two of the three locations. It has a ring of prospering at another's expense. It was in Gqaqhala that no such feeling was encountered and where several farmers expressed interest in combining to fence their fields for winter crops. It may or may not be coincidental that Gqaqhala has the most favourable climate for winter wheat, that it could sometimes be threshed on neighbouring farms, and that it had been possible to sell the grain at the 'kd-operasie' in Ugie. This suggests that where profitable opportunities present themselves customs and attitudes may prove relatively adaptable.

The hypothesis that undernutrition is an important factor is well supported by direct evidence such as hospital statistics but the data could not identify whether it had inhibited
output. During the hoeing season women of all households spent long days in the field when weather permitted. The fact that the increase in family labour in relation to the area cultivated clearly did not increase yields suggested that labour was applied to each acre ploughed until the marginal product was zero, and that poor nutrition did not at present limit production, though it is possible that it might do so were there more profitable opportunity for hard work.

Ignorance is an important factor in relation to choice of fertilizer, and also to the practice of vegetable gardening. Nevertheless most people recognized that there were others who cultivated better than themselves, (i.e. they knew of more productive techniques) but attributed this to their possession of cattle and higher incomes. Indeed, both these factors were clearly related to output.

There is no doubt that bottlenecks in key factors was one of the most important superficial causes of low yields and uncultivated land. Finance at the appropriate time was a very real constraint. Credit facilities were almost non-existent except for lending of relatives and the credit sometimes given by tractor owners. The availability of the latter varies from place to place, but it is an important part of the service, and it is to be hoped that as competition between tractor-owners increases credit will more often be given.

However, a large minority of those who had not borrowed said that they would not have done so in any case, for fear of being unable to pay; this highlights the important factor of risk, as well as the low expected profitability of cultivating.

The labour constraint deserves special mention, since it is
the result of a choice as to resource allocation from which other constraints ensue. Male labour is particularly important. The shortage is due mainly to the choice to work elsewhere, and to the fact that men do not give up their land to someone who is able to cultivate it efficiently and make a living out of it. Instead his family make a part-living from farming. This situation is permitted by the lack of rent for a field.

The determinants of the decision to migrate could not be treated in this study and are considered elsewhere (e.g. M. Wilson, 1952, F. Wilson, 1972). However it must be recognized that it is artificial to look at the homeland families as if their labour endowments were fixed, and the kind of incomes available from agriculture must have been relevant to the decision. Were the returns to labour - and to money - high enough to justify investment in agriculture under present circumstances? For example some families were in a position to choose between spending, and losing agricultural labour by keeping a child in school for a higher Standard. All families, excepting only a few red blanket families, would opt for this alternative if they could possibly find the money, in preference, say, to fertilizer.

From information of people's norms and expectations and on best-practice technique it was found that a 10 acre farm with a 1 acre garden with vegetables would earn a conventional Xhosa farmer at the most a net total profit of R207 (R17.30 per month) if the weather were favourable and making no charge for family labour or oxen. A good farmer making use of relevant technical knowledge and the recommended amount of a suitable fertilizer would in a good year make perhaps R606 a year (R50 per month). Average net revenue in a 'normal' year was R15 per acre, R150 a year in the 10 acre holding. Compared with wages in the town this represents a very substantial sacrifice. The calculations on revenue and profit which would have been earned in the last decade
given in Appendix III substantiate this conclusion. Perhaps, since total revenue is considerably higher for fields when a man is present, the average figure gives a somewhat exaggerated idea of the choice, but the order of the discrepancy in income would not change.

5. CONCLUSIONS

It is difficult, when observing a situation in which all the features are closely linked, to separate causes from symptoms. There is clearly a chain reaction involving low income, infertility of the soil and migration which feeds upon itself. However there is evidence of sufficient interest in the profitability of agriculture to conclude that further agricultural extension, provision of ploughing facilities and credit would ameliorate the situation and relieve some of the most crippling bottlenecks. Vegetable gardening provides a hopeful possibility for women to cultivate cash crop conveniently close to home. The lack of markets may be improved by cooperative purchase for fertiliser, pesticides etc. through Farmers'Associations. It is worth noting however that the migration which deprives agriculture of interest and labour also deprives it of those most capable of leadership in initiating these processes.

In the way of substantial improvement stand major structural factors which have been briefly touched on; the density of small plots and communal system of tenure which prevents lease is linked not only, or chiefly to the tribal structure of the Transkei but to the distribution of land in South Africa as a whole. The resulting level of poverty and helplessness requires more than the improvement of services, education and organisation.
NOTES

1. Source: Department of Bantu Administration and Development.


8. For data on malnutrition, see "Observations of the Diet

9. Compare this with results of the survey of Income and Expenditure conducted among rival households in Tabaukulu and Willowvale by S.S.A. Steenkamp for the Bureau of Market Research, BENBO, reported in the BENBO Transkei Economic Revue, op. cit. He finds agriculture (including income from livestock) contributes 32% to income. The income figures quoted are more than twice those found in the Tsolo sample.


11. I do not propose to assess government programmes' contribution to Development here. However the 'Betterment Scheme' or 'Rehabilitation' is an essential factor in the situation of cultivators and is treated by Christopher Board, SAJE, 1964.

12. op. cit p.12

13. Monica Wilson, 'Reaction to Conquest'.


15. Family Incomes in the Tsolo District op. cit.

16. Evidence to be supplied on request.

17. Trudi Thomas op. cit. "Malnutrition in the Tsolo Area", G.M. Westcott, St. Lucy's Hospital, 1975, unpublished. See Appendix IV.
18. Theodore Schulz, in "Transforming Traditional Agriculture", was the pioneer of this school of thought. For work in an African context see Elwin Dean, 'The Supply Responses of African farmers; Theory and Measurement in Malawi, "Amsterdam, North Holland publishing Co., 1966, especially chapter 4.

19. The cattle population has now fallen well below its peak level in the 30's (see the Tomlinson Commission, 1954) Even from 1967/8 to 1973/4 it fell from 1 313 thousand to 1 194 thousand.


22. Beinart op.cit.


24. ibid, p. 98.

APPENDIX I
LABOUR USE IN AGRICULTURE

1. Location

2. Date

3. Name of Respondent

   Sex M [ ] F [ ]

4. Education: 1. Below St.1
   2. St. 1 to IV
   3. St. IV-VIII
   4. Matric
   5. Higher (state type of higher education)

5. Were any agricultural subjects involved? YES[ ] NO[ ]
   If 'YES' State type of course:

6. Name of spouse

7. Education of spouse: 1. Below St. 1
   2. St. 1 to IV
   3. St. IV-VIII
   4. Matric
   5. Higher (state type)

8. (St. IV and above only) Were any agricultural subjects taken? YES[ ] NO[ ]

9. For all those at your kraal, starting with yourself, please give:
   Respondent: Age...... Occupation...... Income received
   in home.............. from this (include pension) monthly
   Relation............ Age...... Occupation...... Monthly income
   in home............... (state if school. If away working give
   place of work)
   Relation............ Age...... Occupation...... Income......
   Relation............ Age...... Occupation...... Income......
   Relation............ Age...... Occupation...... Income......
   Relation............ Age...... Occupation...... Income......
   Relation............ Age...... Occupation...... Income......
   Relation............ Age...... Occupation...... Income......
   Relation............ Age...... Occupation...... Income......
   Relation............ Age...... Occupation...... Income......
   Relation............ Age...... Occupation...... Income......
   Other members of kraal...........

OWN LANDS

10. How many morgen do you possess? .........

11. How many fields is this? .............
12. Distance of field(s) from kraal: .................

13. How many morgen do you cultivate of your own land? .................
   If none, go to Q.

14. How many morgen do you cultivate for other people? .................
   How do they pay you? ................. Amount paid ..................

15. For each of your own fields please state:

   (A) What is the soil type? ................................................
   First    Second    Third

   (B) Area .................................................................

   (C) Method of ploughing
       1. Tractor (own) ...................................................
       2. " (hired) .....................................................
       3. " (borrowed) ...................................................
       4. Owen (own) .....................................................
       5. " (hired) .....................................................
       6. " (borrowed) ...................................................

   (D) Who ploughs?
       1. Self ...............................................................
       2. Husband ...........................................................
       3. Relative ...........................................................
       4. Shareholder ......................................................
       5. Neighbour ......................................................
       6. Other (state) ....................................................

   (E) How did you pay for ploughing?
       1. Cash ...............................................................
       2. Kind ...............................................................
       3. Services ..........................................................

   (F) Approximate cost of ploughing
       R .................................................................

16. If sharecropper, how is the produce divided? .............................

17. Do you plough once or twice in the year?
   1. ONCE ................. 2. TWICE .................

18. At what time(s) is ploughing done? .................................
   What prevents you from doing this earlier? ......................

19. Who decides what shall be planted? .................................

20. Are the prices of the various crops taken into account
    when deciding what to plant? .................................

21. Do you ever buy seed?  1. YES ................. 2. NO .................
   If yes, what sort?  Price  ...........................................
   Amount bought?  For how many morgen?  .........................
22. Method and arrangement of planting:
1. Mixed rows beans and mealies
2. All crops separate places
3. Pumpkins intermixed with mealies
4. Other (state)

23. What crops are planted? Give area sown and amount of seed used
1. Mealies
2. Beans
3. Pumpkins
4. Amamzimba
5. Other (state)

24. Do you apply chemical fertilizer? 1. YES 2. NO
How many bags? .................
What kind is it .................
At what price? .................
Why do you not use (more) fertilizer?
1. It doesn't improve crop much
2. Crop good enough without more fertilizer:
3. Lack of money
4. Harmful
5. Unobtainable
6. Other (state)

25. Do you apply kraal manure? 1. YES 2. NO
How many bags? .................
From your own, or someone else's kraal? 1. OWN 2. Someone else's
Was there any cost for this? (state amount) .................
Why do you not use (more) kraal manure?
1. Doesn't improve crop much
2. Crop good enough without
3. Unavailable
4. Lack of money
5. Other (state)

26. Is your field cultivated (scoffeled) 1. YES 2. NO
Who does this? .................
1. Using a tractor
2. Using oxen
How many times? .................

27. How many times is your field hoed?
Who does this? .................
1. Using a tractor
2. Using oxen
How many times? .................
What is the total period during which you hoed? .................
Did you hoe every day? .................
Did the others? .................
28. Do you ever hire someone to work in the field? **YES**.....**NO**.....
For how long (in days or weeks) .................................................
What is the rate of pay? ..............................................................

29. **Harvest:** Please give details of what you harvest.

**Crop:**

<table>
<thead>
<tr>
<th>MEALIES</th>
<th>BEANS</th>
<th>PUMPKINS</th>
<th>AMAZIMBA</th>
<th>OTHER (state)</th>
</tr>
</thead>
</table>

(a) Last year, how much was reaped?
(b) How much in a normal year if rains are moderately good?
(c) How much did you sell of each crop last year?
(d) At what price?

Total val. of sales
Total val. unsold crops

30. Do you ever borrow money to cultivate? **1. YES**.....**2. NO**.....
If 'YES', how much did you borrow this year? ....................
From where (or whom)? .........................................................
On what terms? .................................................................
If 'NO': Would you make use of an opportunity to borrow money if it were available? 1. **YES**.....**2. NO**.....
Have you ever borrowed in the past? 1. **YES**.....**2. NO**.....
From whom or where? ...........................................................

31. Do you have any special problems in cultivating? .....................
........................................................................................................
In harvesting? ...........................................................................

32. If any of your land is not ploughed what is the main reason?

1. Cost of ploughing 6. Cost of fertilizer
2. Availability of tractor 7. Do not need to plough
3. Oxen weak 8. Risk of a bad crop
4. Low yield 9. Other (state)
5. No-one to work field

More details: ..............................................................................

If someone had lent you money would you have ploughed?
**YES**.....**NO**.....

GARDEN (If none go to question 35)
33. What do you grow in the garden? (a) in summer
(name all crops and vegetables)
(b) in winter

Is garden fenced?

34. What items do you sell from your garden?

What is the total annual value of sales?

35. If you have no garden why is this?
   1. No money for fence
   2. No-one to work in it
   3. Stony ground
   4. Other

36. Are many fields in your location left unploughed? What is the main reason?

37. Do you notice any particularly good farmers around you
   1. YES
   2. NO
   What do they do differently from other people?

38. Is there an Agricultural Officer in this area?
   1. YES
   2. NO
   If 'YES' how does it help you?

40. Are there any recent changes in the methods of cultivation in this area? What are they?

   Who introduced the change(s)?

41. Could your family live from only your land and animals, if you had no other income
   1. YES
   2. NO

42. In your father's time, did his land and animals give enough food for the family?
   1. YES
   2. NO
   (Comment)

43. What are the most important changes since that time?

   ..................

   ..................
To be completed by the interviewer after the interview has finished.

1. Comments on the family situation: well-off, comfortable, struggling; whether healthy, clean etc.

2. Does respondent seem interested in agriculture? Keen to improve his/her production?

3. Any special problems.
## Appendix II: Note on Production Data and Prices

### Appendix Table 3a

Average yields, value of output and net income per acre

<table>
<thead>
<tr>
<th>Location</th>
<th>Normal Year</th>
<th>1975/6</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gqaghala</td>
<td>778</td>
<td>77.3</td>
<td>46.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ntshiqo</td>
<td>445</td>
<td>51.6</td>
<td>35.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mjika</td>
<td>578</td>
<td>55.6</td>
<td>25.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See notes on p. 12 and 13.
(a) Calculation of Yield from Field Samples: Maize

Yields were estimated for the 1975/6 crops by the following method: the number of cobs in 10 metres of a row was counted. Rows are spaced 1 metre apart (most cultivators use a planter which does this automatically), and a hectare then includes 100 rows 100 metres long. Population of cobs is thus, 1 000 times the number counted. Three cobs were taken from the field, large, small and medium sized; these were still "green". To estimate the weight of dry grain obtained from the cobs the diameter and length were taken and conversion carried out by the standard formula supplied by the Department of Agriculture. The average yield of dry grain from the cobs, ykg.

\[ y = \frac{1000}{90} \text{ bags (each weighing 90 kg) per hectare}. \]

(b) Estimation of other magnitudes

Inputs of fertiliser were estimated in bags; most cultivators knew the price of the brand they used - from this it was possible to identify the type. For inclusion in production functions the brands were aggregated according to the following weights which are related to the nutrient content of the fertiliser:

- Superphosphate (8.3) = 1
- NPK mixture (3.2.1) = 1.6
- Growmore - counted as 1 bag manure + 0.2

For estimation of net income per acre prices for each brand were used as given.

Income

'Income' was used here to refer to cash income from sources other than agriculture. It was felt that more inaccuracies were recorded from answers to questions about family income than by noting which members of the family were employed and their occupations. It was then possible to infer roughly what cash income was received. This could be achieved with greater certainty for incomes earned in the Transkei than was the case with remittances from migrants which in any case tended to be irregular in amount. The average remittance of R15-20 a month was discovered from a previous survey in this area, and this scale of income was used unless more precise information was obtained. The categories used are those in Table 6.
Appendix II p.3

(c) Prices

Prices prevailing locally at the beginning of the season were used to calculate revenue and costs. In some cases there was considerable disparity between stores: an average was then taken. Ploughing charges were accounted for at a standard value per acre for each location.

Prices were:

- Hybrid seed (SA4 or SA9) R10 per bag
- Fertiliser: NPK mixture 32.1(22)R 5.80
- Superphosphate (8.3)R 3.80
- Growmore R 1.80
- Maize: consumers price/bag R 6.00
- Beans, per bag R18.00
- Amazimba (sorghum) per bag R14.00
- Pumpkins, sledge R18.00
- Tractor ploughing, per acre:
  - Mjiaka R 7.00
  - Gqaqhala R 7.00
  - Ntshigo R 5.00

No price was imputed to family labour. Since alternative income-earning opportunities are extremely scarce, and there is no uniform price for casual labour (e.g. hoers earn 20c to 50c per day) any imputed price would be arbitrary. Instead the net income per acre was regarded as the return to labour.

Where oxen were used to plough, the charge was imputed to oxen and added to total household income.

(d) Reliability of the data

For the two locations Gqaqhala and Mjiaka the average yields of maize from the fields on lands which had produced a crop in 1975/6 agree quite closely with the average given for a 'normal' year, although the correlation between the two series was not significant (i.e. individuals succeeded very differently from their own past performance). This was to be expected after such unusual climatic conditions.

For Ntshigo the yields claimed for a 'normal' year were probably somewhat underreported; this may have been due to the nearness
Appendix II p.4

of the hospital which had earlier carried out a fencing scheme for some of the worst off. Respondents may have felt, despite disclaimers that they would qualify, if poor enough, for a new scheme. Two questionnaires were discarded for obviously unreliable information.

However the 1975/6 results confirmed that average yields for Ntshiqo were lower, at least, than those in Gqaqhala. Mjika suffered particularly from waterlogging this year because of its position in a valley of higher rainfall and only 5 fields in the sample bore a measurable crop.

The fact that a high degree of explanation in terms of immediate inputs was achieved for data for a 'normal' year while those for 1975/6 season were in explicable to any significant degree suggests that the information was reasonable accurate. The bias will be on the high side because of the exclusion of poor years from the estimation of 'normal' yields and of crop failures from this year's harvest.

Appendix III

Variability of Revenue

Table 8: Production and Revenue 1964/5 to 1974/5 (1975 prices)

<table>
<thead>
<tr>
<th>Year</th>
<th>Maize yield Bags/acre</th>
<th>Value of output R/acre²</th>
<th>Net revenue after ploughing cost R/acre @ R7/acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>1964/5</td>
<td>0.92</td>
<td>7.34</td>
<td>0.34</td>
</tr>
<tr>
<td>1965/6</td>
<td>1.06</td>
<td>8.48</td>
<td>1.48</td>
</tr>
<tr>
<td>1966/7</td>
<td>1.37 ⁴</td>
<td>10.96</td>
<td>3.96</td>
</tr>
<tr>
<td>1967/8</td>
<td>0.96</td>
<td>7.68</td>
<td>0.68</td>
</tr>
<tr>
<td>1968/9</td>
<td>0.91</td>
<td>7.28</td>
<td>0.28</td>
</tr>
<tr>
<td>1969/70</td>
<td>1.18</td>
<td>9.44</td>
<td>2.44</td>
</tr>
<tr>
<td>1970/1</td>
<td>1.04</td>
<td>8.32</td>
<td>1.32</td>
</tr>
<tr>
<td>1971/2</td>
<td>not given</td>
<td></td>
<td>1.72</td>
</tr>
<tr>
<td>1972/3</td>
<td>1.09</td>
<td>8.72</td>
<td>1.72</td>
</tr>
<tr>
<td>1973/4</td>
<td>0.46</td>
<td>3.67</td>
<td>-3.33</td>
</tr>
<tr>
<td>1974/5</td>
<td>0.97</td>
<td>7.76</td>
<td>0.76</td>
</tr>
</tbody>
</table>
Appendix III p.2

1. Source: Department of Agriculture and Forestry Annual Reports 1964/5 to 1974/5, Umtata.

2. Output per acre planted with mixed crops is not estimated in official statistics. Column (3) has been calculated from the average ratio between values of maize production and total value of output (including beans, pumpkins and Amazimba) obtained from the Tsolo sample, pf 1:1.33. The 1975 price for maize of R6 per bag is used.

3. Assuming a cost of R7 for ploughing by tractor. In 1964/5 the Annual Report states that there were 4 tractors in the Tsolo District, 57 in the Transkei as a whole. By 1974/5 these figures had grown to 83 and 1 547 respectively. Thus during the period an increasing proportion of cultivators were changing over from a situation in which they earned virtually the whole net revenue to one in which most of it went to tractor charges. Col. 3 and Col. 4 therefore apply to different individuals. No fertiliser cost has been included in the calculation since amounts used during most of the decade were probably fairly small. However by the early '70's', the figures suggest that cultivators using both tractors and fertiliser would, on average, have been making a loss even without imputing a return to labour.

This is of course an extremely crude method of assessing the partial elasticity of output and revenue with respect to environmental conditions, since so many other changing variables cannot be controlled for. However it does show that the profitability of Transkei agriculture as at present carried out is so small as to be easily wiped out by unfavourable circumstances or rising costs.

In these circumstances it seems more appropriate to ask why people cultivate at all than why they do not make full use of their land. Returns to labour appear to be minimal. A clue may be found in the answers to the question "why do you not grow other crops;" many were of the form "we grow mealies because it is our staple food." Sometimes it was made explicit that families like to be sure of their subsistence requirements as far as possible. Many women live in perpetual insecurity, aware that support from a migrant labourer may not arrive for a period or cease altogether, so that some measure of independence at home is highly desirable. Cash cropping however presents risks,
as described earlier, because of the lack of a market and the possibility of unfavourable terms of trade between other crops and maize. Growing one's own food provides, in their eyes, the most adequate insurance against the risk of losing other sources of cash income.

Appendix IV
Table 3: Composition, Cost and Nutritional Content of 1 Kilogramme of 'Typical' and 'Umngqushe' diets.

<table>
<thead>
<tr>
<th>Item</th>
<th>'Typical' Diet</th>
<th>'Umngqushe' Diet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weight (g)</td>
<td>Cost (cents)</td>
</tr>
<tr>
<td>Mealies</td>
<td>736.0</td>
<td>5.78</td>
</tr>
<tr>
<td>Beans</td>
<td>54.2</td>
<td>2.98</td>
</tr>
<tr>
<td>Pumpkin</td>
<td>144.3</td>
<td>5.62</td>
</tr>
<tr>
<td>Amamzimba</td>
<td>5.7</td>
<td>.04</td>
</tr>
<tr>
<td>Bread</td>
<td>34.2</td>
<td>.49</td>
</tr>
<tr>
<td>Sugar</td>
<td>25.0</td>
<td>.49</td>
</tr>
<tr>
<td></td>
<td>999.4</td>
<td>15.40</td>
</tr>
</tbody>
</table>


¹/ Allows for only 50% absorption of protein, due to imbalance of amino acids and / or cooking.
²/ 'Umngqushe' - samp and beans.
Table 4: Basic Food Requirements and Cost per Day and Per Month

<table>
<thead>
<tr>
<th>Daily Requirement</th>
<th>Cost per Day (c)</th>
<th>Cost per Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>'Typical' Diet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woman, 22-35</td>
<td>1.5kg</td>
<td>23.1 R6.94</td>
</tr>
<tr>
<td>Man, 22-35</td>
<td>2.1kg</td>
<td>32.4 R9.72</td>
</tr>
<tr>
<td>Child, 8-10</td>
<td>1.7kg</td>
<td>25.5 R7.63</td>
</tr>
<tr>
<td>'Umngqushe' Diet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woman, 22-35</td>
<td>1.25kg</td>
<td>10.65 R3.19</td>
</tr>
<tr>
<td>Man, 22-35</td>
<td>1.60kg</td>
<td>13.70 R4.10</td>
</tr>
<tr>
<td>Child, 8-10</td>
<td>1.30kg</td>
<td>11.1 R3.34</td>
</tr>
</tbody>
</table>

On the first diet it would cost the average family (consisting of 0. men, 1.5 women and 3 children) R40.94 per month to live for food only. On the second diet it would cost R16.85.

Note that these are not minimum living standards.

In this sample it was found that about 61 families (28%) received an income below that sufficient to buy a umngqushe diet. Another 83 families fell below the level necessary for a 'typical' diet allowance, 39%, making 67% in all below this level. This calculation was made after 4 cases had been excluded because they were obviously lying or had given inadequate information and another 10 families upgraded on the basis of the assessment of interviewers or on their own statement that they had enough to live on.