Education, training and agricultural development in Zimbabwe

Anders Närman
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Anders Närman

International Institute for Educational Planning

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Chapter 1
Introduction

General trends in agricultural production in Africa over the last couple of decades have been negative. The euphoria which characterised a short period following Independence has since taken countenance of a much gloomier picture. Numerous reasons for this unfavourable situation have been brought to light. Natural causes, such as drought and environmental degradation, are combined with such factors as a high population growth rate, distorted production in favour of export crops, farmer conservatism, economic crisis, etc. A lot of research has been devoted to the investigation of the basic shortcomings in African agriculture.

Zimbabwe can be considered an exception in this context, however. At least on a national level, crop production, both for export and subsistence, has been satisfactory. Not only is Zimbabwe producing traditional export crops, such as tobacco, cotton and tea; the country produces a surplus of maize which it exports to more unfortunate neighbouring countries in Africa, a major part of this produce coming from communal (peasant) farmers.

For the SADCC region, Zimbabwe has been entrusted particular responsibility to monitor food security. This implies not only that agricultural production capacity is sufficient in national terms, but that there is also increased development in terms of self-reliance at the individual household level.

These are the perspectives which form the backdrop to our study of the underlying factors behind the relative success of Zimbabwean agriculture when considered in the African context. To discover the factors which contribute to this relative success would be an activity beneficial to other governments who are seeking methods to induce improved productivity among their farmers. Some obvious factors may be related to pricing, marketing, credits (and other sources of cash), mechanisation (technical development), irrigation, land reform, availability of inputs (seeds, fertilizers etc). The scope of this report will be to relate the specific impact on agriculture from education/training and research. Education - as reference shall be made to it - is agricultural education, but also a more general education.

The report will focus on the small-scale farming sector operating on communal lands, and will give attention to crop production, with special emphasis on two important crops, maize and cotton. Maize is not only the main staple food grown by most farmers; it is also sold to generate income. Cotton has been selected for study to represent a crop where the production is quite complicated, and also as a crop presently grown by both large-scale commercial and peasant farmers. Unlike maize, the production of this crop is of no value to the individual farmer if it cannot be sold.
Agricultural research is one of the pillars upon which may be based increased farming productivity. Through experiments, new crops with a higher yield can be developed, and these crops can be tried out under various natural conditions. A shift in research priorities, in favour of communal land production, would probably result in a growing emphasis being placed on drought-resistant varieties.

Technical innovations in agriculture derived from research have to be disseminated to the farmers through the extension services. An efficient research-extension network will involve farmers as more than passive receivers of new technologies, but as actors also, initiators of research; through this dual process at the farm community level, research can be made more relevant. Special attention has thus been given in this report to the central role of these actors in the development process.

In terms of education, we have assumed the presence of a strong relationship between post-secondary education and technological development. A cadre of skilled agricultural manpower is needed for research and for the extension of innovations. A basic requirement is to ensure both an efficient educational structure, including both general schooling and more specialised vocational training.

Agricultural extension itself is a form of non-formal education offered to the farmer. Once an individual farmer has been adjusting his/her production in accordance with advice from extension workers, acceptance of other sets of innovations will become progressively easier for him. In order for the farmer to participate efficiently in such an activity, it is likely that some years of basic general education would constitute a distinct advantage. It is held that the skills transferred through the extension services for adoption by farmers would be more easily implemented by those who have acquired the ability in reading, writing and arithmetic. A consequence, if we accept this assumption, is that farmers without education may remain outside technical evolution in agriculture. Thus, if the entire farming community is to be concerned by a process of change, the extension personnel must pay special attention to non-educated farmers.

In order to evaluate the impact of research, extension and education/training, one task is the examination of how the system is expected to function. Our examination includes a review of general policies, and of the objectives of certain institutions. The actual operations within the structures are analysed. Activities conducted by research organisations are described. Quantitative expansion within the formal education system has been evaluated with consideration to capacities for upholding qualitative standards. Vocational education/training for agricultural staff at different levels is outlined. Finally, an attempt has been made to show how the extension service functions within the edict of its objectives. The separate components in this organisational set-up have been studied in isolation; an equally important task was to distinguish the links established to integrate the work of research, extension and education/training into one common structure.

Conclusions drawn follow the close study of official documents (statistics and policy statements), Annual Reports, literature particular to the field, research reports, fact sheets, etc., and frequent use has been made in the report of direct quotation in order to illustrate certain specific policies and more general objectives.
Numerous interviews, expressing both official statements and subjective opinions were carried out, and the results of these have been worked into the analysis. In order to get a first-hand visual impression of educational/training and research institutions, several study tours were made. Meetings were organised with agricultural extension staff, both in their respective offices and 'in the field'. Apart from the Harare region, the two provinces of Midlands and Matabeleland South were visited. As many parts of the analysis are the result of series of discussions, no particular reference is made in the text to individuals.

In many cases, various technical data has had to be placed in a more general socio-economic perspective. No attempt has been made to find an exact quantification of various factors, as within the complex reality of an integrated network of correlations, it is often difficult to isolate a specific cause for development tendencies in any given direction.
Chapter 2
Agricultural development and policies

This Chapter outlines the general status of agriculture in Zimbabwe and in so doing prepares the scene for the main issues discussed later in the report. It illustrates the significance of agriculture in economic terms, and with regard to employment. The heterogeneous nature of Zimbabwean agricultural land is charted in order to familiarise the reader with the environmental factors involved, and those factors which also influence ownership.

Following this exposition is a review of the policies which govern agricultural strategy in Zimbabwe, and of the organisational framework which operates to implement these policies. Finally, account is given of the trends in production, especially as they relate to the communal farming sector. The two crops referred to in Chapter 1, maize and cotton, will be given particular attention.

Overall, the Chapter gives information which is essential background material to the analysis which follows later (see Chapter 5) in the report, and which links agricultural development to factors such as education, training and research.

2.1 The importance of agriculture

2.1.1 Economic factors

Agriculture is of the utmost importance to development in the Zimbabwean context, as it is in other African countries. This is illustrated in Table 2.1, where the direct contribution of agriculture to the national GDP is indicated.

In contrast to many African countries, Zimbabwe has a national economy which can rely on a diverse range of resources. Both mining and manufacturing represent a substantial share of the GDP, while for the decade just past, the percentage contributed through agriculture remained at the quite significant average of 14 per cent (with evident fluctuations due to climate).

Table 2.1 indicates a significant increase in expenditure on education. The higher figure allocated to education in comparison to other essential social services (for example, health), reflects a clear policy emphasis in favour of education.
Table 2.1 Gross Domestic Product according to industry of origin various years (in percentages)

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Agriculture and forestry</td>
<td>15.5</td>
<td>14.0</td>
<td>11.6</td>
<td>14.8</td>
<td>14.0</td>
</tr>
<tr>
<td>Mining and quarrying</td>
<td>10.2</td>
<td>8.8</td>
<td>8.1</td>
<td>7.5</td>
<td>7.1</td>
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<tr>
<td>Manufacturing</td>
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<td>25.0</td>
<td>24.5</td>
<td>24.0</td>
<td>25.0</td>
</tr>
<tr>
<td>Electricity and water</td>
<td>2.4</td>
<td>2.2</td>
<td>2.0</td>
<td>2.4</td>
<td>3.5</td>
</tr>
<tr>
<td>Construction</td>
<td>3.2</td>
<td>2.8</td>
<td>2.7</td>
<td>1.8</td>
<td>1.4</td>
</tr>
<tr>
<td>Finance and insurance</td>
<td>5.9</td>
<td>4.9</td>
<td>5.9</td>
<td>4.7</td>
<td>5.2</td>
</tr>
<tr>
<td>Real estate</td>
<td>1.9</td>
<td>1.3</td>
<td>1.3</td>
<td>1.2</td>
<td>1.1</td>
</tr>
<tr>
<td>Distribution, hotels and restaurants</td>
<td>11.5</td>
<td>14.0</td>
<td>11.3</td>
<td>10.8</td>
<td>10.9</td>
</tr>
<tr>
<td>Transport and communications</td>
<td>5.8</td>
<td>6.5</td>
<td>6.5</td>
<td>6.3</td>
<td>5.9</td>
</tr>
<tr>
<td>Public administration</td>
<td>9.7</td>
<td>9.0</td>
<td>9.8</td>
<td>9.5</td>
<td>9.9</td>
</tr>
<tr>
<td>Education</td>
<td>4.4</td>
<td>5.2</td>
<td>9.0</td>
<td>9.7</td>
<td>9.6</td>
</tr>
<tr>
<td>Health</td>
<td>2.4</td>
<td>2.2</td>
<td>2.6</td>
<td>2.6</td>
<td>2.5</td>
</tr>
<tr>
<td>Domestic services</td>
<td>2.4</td>
<td>2.0</td>
<td>1.7</td>
<td>1.5</td>
<td>1.4</td>
</tr>
<tr>
<td>Other Services</td>
<td>5.8</td>
<td>5.4</td>
<td>6.2</td>
<td>6.4</td>
<td>5.6</td>
</tr>
<tr>
<td>• Less imputed banking services charges</td>
<td>-3.1</td>
<td>-3.3</td>
<td>-3.2</td>
<td>-3.2</td>
<td>-3.1</td>
</tr>
</tbody>
</table>

GDP at constant (1980) prices
ZIM $ million

<table>
<thead>
<tr>
<th></th>
<th></th>
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<tr>
<td></td>
<td>2.863</td>
<td>3.224</td>
<td>3.461</td>
<td>3.882</td>
<td>4.290</td>
</tr>
</tbody>
</table>


2.1.2 Employment in agriculture

Agriculture not only plays an important economic role; it constitutes the dominant occupational activity in Zimbabwe.

In 1980, the total national population was estimated at 7.4 million. At this time, the number of waged employees just exceeded one million. Up to 1988, some 120,000-140,000 new jobs were created in the formal sector, while the national population figure came close to 9 million. Table 2.2 shows the number of wage earners in agriculture (including forestry and fishing) for the period 1970 to 1988, and their share of the country’s employment market.

As a result of events at Independence, there was a slight decrease in the number of employees engaged in a wage-earning activity at this time. Since 1982, however, the figure for this segment of the employment market has stabilised at some 25 per cent of the total figure for all wage earners, with seasonal variation.
In a Manpower Review prepared in 1984, close to 80 per cent of agricultural employees were listed as unskilled labourers. An absolute majority of these were male, and most were working on commercial farms\(^1\); to these have to be added some 1.9 million farmers working primarily on communal lands. The manpower report is therefore not representative of the national situation, but covers a minority of all workers in agriculture.

There are four distinct categories of agricultural landholdings in Zimbabwe:

(i) **Large-scale commercial farms**: Commercial farmers are legal landowners possessing freehold titles to the land they work. In racially segregated Rhodesia, before Independence, large-scale farms were owned almost exclusively by whites. There has been no massive exodus of this category of farmers during the last decade, but a decrease in the number of units is apparent. At present, there are some 4,500 large-scale farmers, compared to more than 7,000 two decades ago. This modern, technologically-advanced agriculture now accounts for about 50 per cent of all landholdings, of which only a fraction (5 per cent) is actually utilised for farming.

(ii) **Small-scale commercial farms**: Some 8,500 families live on these lands. This category of land was previously referred to as ‘African Purchase Area’.

(iii) **Communal lands**: Unlike commercial farming, ownership of communal lands is not individual. The right to cultivate a particular plot is governed by traditional codes. In colonial times, this kind of land was classified ‘Tribal Trust Land’. In all, there are some 850,000 families living on communal lands, or a total of some 4-5 million people.

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\(^1\) Republic of Zimbabwe (1984), *Annual Review of Manpower, 1984*. 

---

**Table 2.2 Agricultural wage earners in total, and as a percentage of the total labour market (in thousands)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>298</td>
<td>(35)</td>
</tr>
<tr>
<td>1975</td>
<td>364</td>
<td>(35)</td>
</tr>
<tr>
<td>1980</td>
<td>327</td>
<td>(32)</td>
</tr>
<tr>
<td>1981</td>
<td>294</td>
<td>(28)</td>
</tr>
<tr>
<td>1982</td>
<td>274</td>
<td>(26)</td>
</tr>
<tr>
<td>1983</td>
<td>264</td>
<td>(25)</td>
</tr>
<tr>
<td>1984</td>
<td>271</td>
<td>(26)</td>
</tr>
<tr>
<td>1985</td>
<td>276</td>
<td>(26)</td>
</tr>
<tr>
<td>1986</td>
<td>276</td>
<td>(25)</td>
</tr>
<tr>
<td>1987</td>
<td>266</td>
<td>(25)</td>
</tr>
<tr>
<td>1988</td>
<td>277</td>
<td>(24)</td>
</tr>
</tbody>
</table>

(iv) **Resettlement schemes:** Some farmers, who previously farmed communal land, have been resettled to land which was previously of the commercial land type; this is land which is purchased by the government and resold on a willing seller/willing buyer basis. A total of 50,000 families have by now resettled. There are basically two models for resettlements: category A governing resettlement to individual plots, and category B governing resettlement to cooperatively-worked land. Resettlement, however, has not yet reached the levels originally believed. Since Independence, there has been continuous intensive debate on the issue, but the task is complex and cannot in itself be the panacea to complete change. "Unless we have a major plan, we are likely to create problems rather than solutions": such is the caution voiced by a lecturer in political economy at the Belvedere TTC, Mutwira.

The lands occupied for large-scale commercial production and communal farming are of about equal size. Map 1 gives the distribution of land according to these classifications.

The term employment -- as we have used it above -- refers to jobs only in the formal wage labour market. Yet the majority of the economically-active population in Zimbabwe, is involved in some form of self-employment, the absolute majority being communal farmers. In 1987, there were an estimated 1.8 million communal farmers, or 55 per cent of the total labour force. According to this wider use of the term employment, almost 70 per cent of all workers in 1987 were in agricultural occupations. Between the year of the population census (1982) and that year, the number of active communal farmers increased by an estimated 800,000.

Among the active communal farmers listed in the table, an absolute majority (61 per cent) are female. The men, particularly in the age span 20-44 years have, to a large extent, migrated elsewhere to acquire wage employment, many of them working as labourers on commercial farms; others have gone to the cities in search of opportunities for work. Consider the picture of Harare, for example, where in 1986, not less than 56 per cent of the population above the age of 15 years were men.

We can assume that there is a certain potential for remittances from urban to rural areas in the case where a male member of the family has gone to work in a city or town. One study has shown that women whose husbands are elsewhere in wage employment often become involved in cash crop production. Where this happens, it is likely that the input for the purchase of technology required will be paid for by remittances from the husband.

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Map 1. Distribution of large-scale commercial (general) and communal lands.

Agricultural development and policies

Work on resettled land is regarded as full-time employment; a man may not, in other words, be a settler and at the same time earn a living through some other form of employment. Farmers involved in resettlement programmes should be allocated lands which allow them to earn a living equivalent remuneratively to not less than the minimum wages paid to an agricultural worker.

The resettlement scheme, 'category B' (co-operative), does not play a significant economic role in the agricultural development of Zimbabwe, although it should be noted that many co-operatives have been created, and quite a number of existing ones, such as the Cold Comfort Farm, have been revitalised.

2.1.3 Diversity of natural conditions for agriculture

Land in Zimbabwe may be classified into five regions according to natural conditions, where the differences between the highly-potential agricultural areas surrounding the capital Harare, and the drier land of Matabeleland South, for example, are substantial. This diverse character of the land in Zimbabwe is a consideration central to any analysis of agricultural activity there: three-quarters of all communal land is situated in what have been classified natural regions IV and V -- land of only limited suitability for cultivation.

These agro-ecological zones are illustrated in Map 2. The natural regions listed are I (specialised farming), II (intensive crop farming and semi-intensive mixed farming), III (semi-intensive livestock farming), IV (extensive livestock farming) and V (unsuitable for farming), they are classified according to land type.

The State of Zimbabwe, at Independence, inherited a dualism in agriculture dating from the colonial period which is still very present and deep-rooted. Large modern commercial farms were producing, on average, 81 per cent of the total agricultural output, and there appeared to be little optimism for the future of other types of agricultural activity in the rest of the country.

"Communal areas (or former Tribal Trust Lands) are generally in the poorer ecological zones and are inhabited by about 700,000 families. It is estimated that they have a carrying capacity of not more than 325,000 families, or just over 46 per cent of the current number of inhabitants. Therefore, significant overcrowding, combined with generally poor land husbandry, poor agricultural and physical infrastructure, and the damage caused by the War, have contributed to the under-development of the sector".

The reasons for low productivity in communal areas were part of a complex web of inter-linked factors.

Map 2. Agricultural regions in Zimbabwe classified according to land quality (natural conditions)

"Population pressure and inadequate provision of complementary agricultural inputs, including extension services, marketing and credit facilities, have greatly affected the productivity of communal areas. This, together with intensive cropping, soil erosion over the years, and poor land husbandry, has led to serious soil degradation in many areas."
[Republic of Zimbabwe, 1982, p.64.]\(^9\)

Attainment of sustained agricultural production and integration of the commercial and communal sectors into one national system were two of the priority tasks to be taken into account by the 'Independent' Government.

### 2.2 Agricultural policies

The Ministry responsible for agricultural policy and support services is the Ministry of Lands, Agriculture and Rural Resettlement. It has under its sphere of influence the control of some parastatal organisations.

After Independence, a Commission was also established with the task of initiating an inquiry into agricultural reform. The results of this inquiry were published in the Chavunduka Report, and many of the policies later formulated by the Ministry of Agriculture found their origins in the ideas fostered by this document.\(^10\)

#### 2.2.1 Strategy

The *development plan* adopted by the Ministry of Agriculture at Independence had the following main strategic aims:

(i) Creation of a surplus for export.

(ii) Provision of inputs to the local manufacturing industries. It is true that:

"... agriculture has played a strategic and dominant role in the political economy of Zimbabwe. It has provided a significant proportion of inputs to manufacturing, and nearly all the food requirements for a rapidly growing population, often with a surplus for export".\(^11\)

(iii) Self-sufficiency of agricultural production for individual farmholdings.

The *plan* represents a shift of interest towards communal farming:

"Communal areas will be the target of much agricultural investment in the public sector. Government aims to achieve two goals in its investment programme: the alleviation of poverty and the introduction of institutional, production and service arrangements necessary for rural renewal".\(^12\)

#### 2.2.2 Policy instruments

To implement this policy, measures were to be taken in the following areas:\(^13\)

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9. Ibid, p.64.


Education, training and agricultural development in Zimbabwe

(i) **Marketing**

Until Independence, the parastatal marketing organisation had answered exclusively to the needs of the commercial sector. The intention in post-Independent Zimbabwe was to bring market outlets closer to peasant farmers.

(ii) **Pricing**

Agricultural pricing policies should, in the future, favour development in communal areas. Producer prices would be announced in time to influence actual production.

(iii) **Credit**

Although the Agricultural Finance Corporation would continue to provide loans to the commercial sector, new emphasis would be placed on communal and resettled farmers, so that "it [was] expected to substantially increase its facilities to these farmers." It would also be essential "to ensure their productive use."

(iv) **Inputs**

The government would both secure and work for greater self-sufficiency in the provision of agricultural inputs such as fuel, fertilisers, plant protection chemicals, equipment, etc.

(v) **Irrigation**

The policy would be to build additional irrigation schemes and improve existing ones.

(vi) **Co-operative development**

The co-operative movement would be a base for rapid expansion. At Independence, the prospects for co-operative development appeared to be quite positive:

"The present economic and political climate in Zimbabwe provides an excellent environment for co-operative development. The co-operative movement, severely disrupted during the War, has been largely resuscitated and now provides a base for rapid expansion and reconceptualisation".14

(vii) **Research**

There would be a re-direction of emphasis towards crops of less commercial value, but essential for the subsistence of peasant farmers: 'Apart from crops, more research is needed into farming systems, storage and farm management and post-harvest losses'.

(viii) **Extension:**

Close links would be constructed between research and the extension services.

The First National Plan (1986-1990) adopted the same policy instruments for continuous development when it was drawn up as had been listed in the Ministry of Agriculture's *development plan*:

"Some of these measures include provision of credit facilities to small-scale resettlement and communal farmers, annual review of the pricing policy for agricultural produce, promotion of research activities relevant to the sector and development of irrigation schemes. In addition, agricultural production will be further diversified."\(^{15}\)

The regional dimension was particularly emphasised in the Plan. (The factor of environmental conditions according to region, and the importance of adapting research and extension work to these conditions, will be discussed in Chapters 5 and 6.)

2.2.3 The organisation of the Ministry of Agriculture

The organisational chart of the Ministry is given in *Figure 1*.

A detailed account of AGRITEX (the body responsible for extension activities) and DRSS (the research body) will be given later.

2.2.3.1 Agricultural and rural development authority (ARDA)

The Agriculture and Rural Development Authority appears in *Figure 1*. This organisation is deemed a "key instrument of state involvement in the development of agriculture, and in the wider sense of overall rural development". A primary task of this Organisation is the exploitation of previously under-utilised land, and the implementation of research and planning projects aimed at extending agricultural and rural development potential in Zimbabwe. It is empowered to provide advice on agriculture to peasant farmers living close to its farms, and is itself a major producer of export crops and an important rural employer, with 5,000 permanent and 17,000 casual staff.

2.2.3.2 The agricultural finance corporation (AFC)

Through some of its parastatal organisations, the Ministry of Agriculture is responsible for financial support in terms of credit and marketing, in order to induce increased production. The AFC is responsible for credit to all categories of farmers, both commercial and communal.

---

Loans from the AFC are of three types:

(i) **Long-term credits**:

These are repayable over 25 years, and are made available for the acquisition of agricultural lands. To be eligible for this type of loan, the potential borrower must be qualified either as a farm manager or in a position to employ such a person. This type of loan is also made available for large-scale irrigation schemes.

In 1989, a total of 218 long-term loans were granted, or in financial terms, a total of 13.3 million ZIM $ was apportioned. Of the total figure for loans administered, 117 were to
large-scale commercial farmers, 54 to the National Farm Irrigation Fund, 28 to persons resettling, 16 to small-scale commercial farmers, and 3 loans were accorded to communal farmers.

(ii) **Medium-term credits:**

These loans are repayable over five years, and accorded for the purchase of machinery and equipment. 7,300 such loans were granted in 1989. Close to 6,000 of these loans went to communal and resettlement farmers, to a value of almost 4 million Zim $, while the 200 medium-term loans for large-scale commercial farms amounted in monetary terms to more than 10 million ZIM $.

(iii) **Short-term assistance:**

Most of the credit extended is in the form of short-term loans, payable over 18 months, and is granted in order to facilitate the purchase of direct inputs for crop production. Close to 60,000 communal and resettlement farmers borrowed a total of 40 million ZIM $ in 1989, while 900 small-scale commercial farmers and 13 co-operative unions procured loans of 4 million ZIM $ for each sector. The bulk of the amount imparted, however, -- 90 million ZIM $ -- was distributed among 500 large-scale commercial farmers.16

Most of the agricultural credit yielded by the AFC since its establishment, therefore, has been for short-term assistance directly connected to the ensuing crop season; the largest share of borrowed funds registered has gone to large-scale farmers.

Among communal farmers, only 50,000 of 850,000 families, or one household in seventeen, was granted a loan in 1989, which indicates that the credit system has been of assistance to only a small minority of communal farmers. This may be easily explained perhaps by the necessity to provide a collateral for the loans, which neither small farmers, nor the majority of communal farmers who do not possess title deeds to their land, can provide.

In 1989, a system of group lending was introduced by the AFC, with the primary objective of reducing/minimising administrative costs. Indeed, loan repayments can constitute a heavy burden for the few communal farmers granted this facility. In the national budget drawn up for 1990, 40 million ZIM $ were allocated to the AFC, the increased amount afforded in order to neutralise the deficit effected "primarily from unrecovered loans made to peasant farmers."17 One Ministry official referred to the agricultural credits extended to communal farmers as being something of a double-edged sword, since the projected benefits of increased productivity might not, after all, cover credit costs.

2.2.3.3 **Irrigation**

A certain amount of the credits yielded are specifically for irrigation purposes, since "irrigation [is] clearly one of the most important means of raising productivity."18

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Successful irrigation has, evidently, the capacity to induce rapid increase in agricultural potential.

A major large-scale irrigation plan is presently under consideration for the Zambezi River in Matabeleland North. The implementation of schemes of this type carry immensely high potential to bring about a total shift in agricultural development trends in Zimbabwe.¹⁹

2.2.3.4 Marketing boards

Sales of cash crops are handled officially by the parastatal marketing boards. Both the Cotton Marketing Board (CMB, established in 1969) and the Grain Marketing Board (GMB) are grouped together under the Agricultural Marketing Authority (AMA). All three farmers’ organisations presently have a direct influence on pricing policies within the AMA, a power which, before Independence, was held only by large-scale commercial farmers.

The Grain Marketing Board is responsible for marketing the entire maize, wheat, sorghum, mhunga, rapoko, groundnuts, sunflower seed, soybeans and coffee produce. A large amount, however, of some of these products - particularly maize - is retained for home consumption, and the autonomy of the Board is further complicated by the existence of a dual system for maize trade consisting of two zones, A and B. Zone A is primarily land of the commercial type, and GMB has a monopoly in the purchase of maize in this Zone. In Zone B, the land is almost entirely of the communal type, and here maize can be traded freely within regional boundaries.²⁰

As the sale of crops is the main source of income for most rural households, access to an adequate number of delivery points at an acceptable distance is essential to the farming community. The GMB has had great difficulty in assuring the provision of additional depots at vantage points, despite overt political pressure related to this issue. In rural areas particularly, the lack of delivery points, as well as the lack of empty carrier bags for transporting crops, have insistently been voiced as enormous obstacles to agricultural development. Today, a total of some 70 depots and 13 silos are in use.

Almost all cotton produced is sold through the Cotton Marketing Board. Other transactions take place, however, outside the law: a small quantity, grown in the Beitbridge area, is believed to find its way into South Africa; some cotton is brought to the CMB by local traders acting as middle men, as repayment in part for loans extended to buy necessary inputs. The CMB presently operates eight ginneries, and sells its lint cotton to local and international buyers. In response to increased output, the CMB is in the process of establishing more ginneries.


In line with new national economic policies, the marketing parastatals are to be restructured in order to counteract what at present are held to be bureaucratic constraints leading to inefficiency. It is believed that a more business-like approach is necessary if these Organisations are to overcome their present difficulties. This move to change has been greeted in a positive way, particularly in the commercial farming sector, but prospects for communal farmers are not necessarily bright if this new approach brings with it an end to the construction of collection points and depots.

2.2.4 Security of food production

The extent to which activities in credit, pricing policies and marketing actually reach the broad segment of communal farmers and thereby substantially influence total production is quite difficult to measure. On the basis of general policy, it would seem that results have been positive. In real terms, however, application must be expanded still further if the results are to affect a majority of the rural population.

The Food Security Research Project (FSRP) outlines existing problems, especially in natural regions IV and V. The Dean of the Faculty of Agriculture at the University of Zimbabwe, Dr Rukuni, has voiced an opinion held by many:

"... Zimbabwe needs a comprehensive national policy on food and nutrition. Many Zimbabweans are mistaken that drought is the only cause of hunger."

2.3 Agricultural production

We shall examine below the performance of the agricultural sector, overall and for the two major crops, maize and cotton.

2.3.1 The effect of government policy

In the First National Five-year Development Plan, for the period of 1986-90, the role of the agricultural sector was emphasised as being "in the centre of the development strategy", and the Government positively evaluated the impact of its policy: "Of great significance is the rapid transformation of the rural areas that has been taking place since Independence as a result of deliberate orchestrated Government policy. Peasant farmers have been growing in importance in the production of key crops such as maize and cotton which had been the domain of large-scale commercial farmers prior to Independence."

The same document noted that credit facilities to communal farmers had considerably increased, admitting however, that "communal and resettlement areas still [lacked] an adequate system for the distribution of agricultural inputs and the marketing of crops" at this time. The need to expand the extension services was also expressed in the Plan.


22. Ibid.


24. Ibid., p. 25.

25. Ibid., p. 29.
2.3.2 Natural conditions

Success is determined not only by Government policy, but also to a large extent by natural conditions.

Weather conditions continue to be the major single factor influencing trends in agricultural performance. Under normal weather conditions, the sector has in the past achieved performance levels to make the country self-sufficient in the cultivation of most crops.¹

In an attempt to counteract adverse weather conditions, experiments have been carried out with drought-resistant crops, and efforts to improve the irrigation infrastructure have been sustained. By the end of the eighties, however, the disappointing "moderate growth" nationally "was partly due to the low growth in the agricultural sector".² One significant factor mentioned was the drop in the supply of cotton lint deliveries to the marketing boards.

In 1990, the optimistic tone which had characterised the Government outlooks during the 1980s and in the First National Plan had disappeared, and the picture is a rather gloomy one. Rainfall distribution for that year was uneven and sporadic, and should leave part of the country dry for years to come. The negative spin-off effects of these unfavourable natural conditions mean a reduction in economic activity across all sectors of the economy.

An overview of the trends in agriculture in recent years produces a picture of irregularity: during the period 1980-85 there was a steady growth in gross agricultural output, with the exception of 1983; 1986 brought with it a new slump; three years later, another decrease in agricultural production was evident.

2.3.3 Production on communal lands

A problem of methodology arises in the data presentation below, since production statistics available are for the most part broken down into large-scale commercial farms and others. Thus, what is listed as produce from communal lands can include data for small-scale commercial and resettlement areas.

At Independence, it was estimated that some 20 per cent of the total agricultural production emanated from communal farms. For the years 1981 and 1982, this share increased to approximately 25 per cent, dropping substantially in 1983. For 1985, the communal lands produced almost one third of all crops in the country. The significance of

communal farming has thus increased gradually according to the official data available on the sale of crops (with some variations registered for individual years, see Table 2.3). Of the total output on communal farms, however, only some 30-50 per cent was sold to marketing boards.

The most important of the cash crops sold is tobacco which is, to a very large extent, grown on large-scale commercial farms. Of the pure cash crops, cotton is the second largest in value of sales. Other commercial products are sugar, wheat, coffee and soya beans. Maize is important both as a staple food retained by communal farmers, and as a cash crop.

Table 2.3 Share of official commercial production from communal farms

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>3</td>
</tr>
<tr>
<td>1975</td>
<td>6</td>
</tr>
<tr>
<td>1980</td>
<td>6</td>
</tr>
<tr>
<td>1981</td>
<td>11</td>
</tr>
<tr>
<td>1982</td>
<td>12</td>
</tr>
<tr>
<td>1983</td>
<td>9</td>
</tr>
<tr>
<td>1984</td>
<td>15</td>
</tr>
<tr>
<td>1985</td>
<td>21</td>
</tr>
<tr>
<td>1986</td>
<td>19</td>
</tr>
<tr>
<td>1987</td>
<td>14</td>
</tr>
<tr>
<td>1988</td>
<td>22</td>
</tr>
<tr>
<td>1989</td>
<td>19</td>
</tr>
</tbody>
</table>


2.3.4 Maize production

Maize is the staple food in Zimbabwe, as it is in most other countries in Africa; some of it is also marketed through a parastatal board. It is produced on both commercial and communal farms, and has replaced traditional food crops such as sorghum and millet countrywide.

The average yield for commercial farms is substantially higher than that for communal lands, according to a comparison of commercial and communal maize production carried out shortly after Independence. The average maize yield by communal farmers reached an estimated 1.0 tonne/ha in 1981, compared to 4.6 tonnes/ha for commercial farms.3 There have been substantial variations between different seasons, however, and in 1983, communal lands produced only 0.27 tonnes/ha, lower again than the figure of 1.4 tonnes/ha for 1985. For commercial crops, corresponding figures were 2.2 tonnes/ha and 4.8 tonnes/ha respectively. Average communal yields have been as low as 10 per cent of

large-scale commercial yields, the main explanation for this lying in factors such as land quality, difficulty in the timing of operations, and the degree of use of modern inputs.

Except for the season 1984/85, Zimbabwe has been exporting maize. The greater proportion of this produce for export is bought by development assistance agencies for distribution to neighbouring countries as food aid. Export of maize has stabilised at a figure of some 30 per cent of total sales, reaching as high as 40 per cent in the season 1986/87. A major importer of Zimbabwean maize is Mozambique, while substantial exports have been registered for individual years to Botswana, Malawi, the Republic of South Africa and Zambia.

In 1990, certain indications suggested an over-production of maize for that season, and led the Chairman of the Agricultural Marketing Authority (AMA) to announce that maize production "be cut ... because of constrained local and export markets".

In 1980/81, communal farms represented only 12 per cent of all maize marketed. Since that time, the share of maize marketed from this category of producers has increased steadily. On the one hand, output of maize from commercial farms declined during the eighties as less and less acreage was being used for this kind of production, and other crops are now considered to be more profitable. On the other hand, communal farmers substantially increased their sales in the latter half of the decade.

Table 2.4 Sale of maize to the Grain Marketing Board from commercial and communal farmers 1981/82 - 1988/89 (million ton)

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales Large-scale Commercial farms</th>
<th>Sales Communal farms</th>
<th>Share from communal farms %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981/82</td>
<td>1.651</td>
<td>363</td>
<td>(18)</td>
</tr>
<tr>
<td>1982/83</td>
<td>1.022</td>
<td>369</td>
<td>(27)</td>
</tr>
<tr>
<td>1983/84</td>
<td>464</td>
<td>152</td>
<td>(25)</td>
</tr>
<tr>
<td>1984/85</td>
<td>552</td>
<td>390</td>
<td>(32)</td>
</tr>
<tr>
<td>1985/86</td>
<td>1.009</td>
<td>819</td>
<td>(45)</td>
</tr>
<tr>
<td>1986/87</td>
<td>912</td>
<td>682</td>
<td>(43)</td>
</tr>
<tr>
<td>1987/88</td>
<td>247</td>
<td>156</td>
<td>(39)</td>
</tr>
<tr>
<td>1988/89</td>
<td>441</td>
<td>756</td>
<td>(63)</td>
</tr>
</tbody>
</table>


In an effort to quantify the total production of maize, estimations have been made of how much of the product produced is kept for home consumption. It has been estimated that the communal peasants retained more than 50 per cent of the 1988/89 maize crops for their own consumption. Most communal farmers tend to take the decision to sell part of their maize produce only once they are certain that they have been able to set aside enough for their own consumption; it is uncommon for these peasants to produce cash crops only, thereby leaving themselves totally at the peril of market conditions. Large-scale commercial farmers, on the other hand, kept less than one third of their produce for their own use in the same year, and a large part of what they did keep is assumed to have been for animal fodder.7

The reasons for the increase in maize production on communal lands were related to a number of factors, such as the end of the War of Independence, increased producer prices, suitable maize technology; and access to agricultural services, such as extension, credit and marketing.

However, the expansion has not been of equal quantity in different regions, and the largest gains have occurred in high-to-medium agro-ecological zones. In 1985, not less than 56 per cent of marketed maize from communal and small-scale farmers originated in Mashonaland East, West and Central, with 30 per cent coming from Midlands and Masvingo combined. A disparity between individual households in the same region has also been observed.8

2.3.5 Cotton production

There has been a substantial proportional increase of production of cotton by communal farmers, as has been shown in the case for maize. Cotton is important to the economic development of Zimbabwe, which is the largest producer of the plant in Sub-Saharan Africa. It also constitutes an important input to the internal textile industry. Contrary to the trends noted in the consumption of maize, however, none of the cotton produced by farmers is retained by them, but is sold directly to the Cotton Marketing Board (CMB).

The tradition of cotton growing in Zimbabwe goes back seventy years. The Cotton Research Institute was established in the 1920s, and the first ginnery was constructed in the same year in Harare. However, due to problems connected with pests and disease, it was not until the sixties that cotton production expanded significantly. To a large extent, the breakthrough in cotton production has been attributed to pest control measures developed at the research station in Kadoma (see Chapter 5). Cotton began as a large-scale commercial farmers’ crop. During the 1960s, however, peasant farmers resettled in the Gokwe area, and quickly started to grow cotton. This region is still the major region for communal-land cotton growing (see Map 3).


Map 3. Main cotton growing regions.

Agricultural development and policies

The major natural condition essential for cotton production is soil of quality. It requires only moderate rainfall, and can therefore be a suitable crop for land of only medium potential. It has been claimed that cotton can act as a growth reactor product for communal farmers as no other crop can.

Cotton production plays an equally significant role in terms of the national economy, being second only to tobacco as a foreign currency earner, and being essential for by-products such as cooking oil and stock fodder. In 1987, some 70 per cent of the total national cotton produce was exported, mainly to Europe and the Far East. What remained was used in developing internal textile production.

Government policies on cotton production have not always been consistent, it would appear, from the call made recently for a "national cotton policy to ensure the continued development of this crop", and reactions (such as the following voiced by the President of the Commercial Cotton Growers' Association) to an announcement assuring growers of a minimum pre-planting produce price.

"I am publicly appealing all cotton farmers to consider seriously the implications of the Minister's statement. There can now be no doubt of the Government's commitment to increased cotton production both for internal and external consumption and, as cotton farmers, we must play our part by increasing this production of cotton".

The main reason behind the disappointing produce for 1989/90 had been the bad quality of planting seed.

An appraisal of the apportionment of cotton production among commercial and communal farming sectors shows that there are approximately 1,000 cotton growers registered in the large-scale commercial sector, active growers representing between 65-70 per cent of all growers in the late 1980s. The total area under cotton in the commercial sector was 65,000 ha in 1989 - a slight decrease in acreage when compared to the average for the two previous decades. There are, of course, variations registered for separate years. Certain variations in productivity noted under different conditions are outlined in Map 3.

- During the period 1975-79, average large-scale yields were 1,620 kg/ha, made up of 1,400 kg/ha for dry and 2,150 kg/ha for irrigated land. Average yields in communal areas were 740 kg/ha, still higher than the United States average of 526 kg/ha.

11. [The Herald, 21 September 1990].
12. Ibid.
Commercial farms have been described as "highly mechanised and combine high input levels with high management expertise". These farms are generally served by cotton extension specialists, and differ in size from an average of 80 ha for rainfed land to 140 ha where it is irrigated. Yields registered for the late 1980s averaged 1,300 kg per ha for the rainfed crop, compared to 2,500 kg per ha for the crop yield from irrigated land.

Communal farms are mainly cultivated by hand or draught animals. For specialist services, farmers on these lands may refer to general extension personnel from AGRITEX only (see Chapter 6). The average yield is approximately half that registered for rainfed commercial lands.

It has been claimed that under similar natural conditions, and with parity of access to inputs and marketing, it would be possible to minimise the present sizeable gap in yields evident in any comparison of commercial and communal farming sector outputs. A case in point is the high productivity recorded for the communal farms in Mashonaland: the Director of Agritex described their 1984 output of cotton and maize in natural region II as 'remarkable' and a 'breakthrough', and indicated that some of their yields compared particularly well with the yields of adjacent large-scale commercial farms.

Some 225,000 communal farmers were registered as cotton growers in 1989; a further 18,000 were registered actors on resettled land and 3,400 on small-scale commercial farms. Half of the farmers registered on communal and resettled lands were active cotton growers at the end of the decade, while the figure for cotton growers on small-scale commercial land was somewhat higher. The combined area given over to cotton growing at the end of the 1980s (accounting for the three categories communal, commercial and resettled land), was close to 200,000 ha; to which is added the cotton-growing area of 8,600 ha worked by the parastatal organisation, and major cotton producer, ARDA.

During the second half of the 1970s, some 75-80 per cent of total cotton market sales was the produce of large-scale commercial farms. In 1979 and 1980, the share was even higher, due to exceptionally low production on communal lands. Since that time, however, the proportionate share of cotton deliveries from small-scale producers has substantially increased.

In Table 2.5, the total cotton production is broken down into large-scale and communal farms, including small-scale commercial farms and resettlement areas, and ARDA.\(^{18}\)

The table confirms the impact of communal farming in the production of cotton. According to economic research carried out, the producer pricing policy and improved agricultural infrastructure have played significant roles in this respect.\(^{19}\) In 1988/89, the production was extremely low due to poor seeds which partly failed to germinate. If the assurance given to farmers that seeds for next season’s crops will be of better quality comes to fruition, and if a minimum pre-planting price is announced, production for the present season should equal the figures for 1987/88, at least.

Also, there is much potential for the rise of other activities in industry as a result of spin-off from the cotton trade. The new ginnery being opened up in Gokwe by the Mashonaland Holding Company, for example, is as a direct result of the success of cotton production. Other industries dependant upon cotton supply, such as dyeing and weaving, are also being introduced. These investments in new industries should create some 1,600 new jobs relying upon continued cotton production.\(^{20}\)

Table 2.5 Cotton delivered to the Cotton Marketing Board in total, and divided into large-scale farming areas, communal lands and ARDA [in tonnes (thousands) and percentage shares]

<table>
<thead>
<tr>
<th>Year</th>
<th>LSC N</th>
<th>(%)</th>
<th>Communal N</th>
<th>(%)</th>
<th>ARDA N</th>
<th>(%)</th>
<th>Total N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982/83</td>
<td>108</td>
<td>(64)</td>
<td>45</td>
<td>(27)</td>
<td>15</td>
<td>(9)</td>
<td>168</td>
</tr>
<tr>
<td>1983/84</td>
<td>139</td>
<td>(55)</td>
<td>89</td>
<td>(36)</td>
<td>23</td>
<td>(9)</td>
<td>251</td>
</tr>
<tr>
<td>1984/85</td>
<td>147</td>
<td>(50)</td>
<td>30</td>
<td>(44)</td>
<td>19</td>
<td>(6)</td>
<td>196</td>
</tr>
<tr>
<td>1985/86</td>
<td>112</td>
<td>(45)</td>
<td>120</td>
<td>(48)</td>
<td>17</td>
<td>(7)</td>
<td>249</td>
</tr>
<tr>
<td>1986/87</td>
<td>115</td>
<td>(48)</td>
<td>107</td>
<td>(44)</td>
<td>19</td>
<td>(8)</td>
<td>241</td>
</tr>
<tr>
<td>1987/88</td>
<td>127</td>
<td>(40)</td>
<td>176</td>
<td>(55)</td>
<td>19</td>
<td>(5)</td>
<td>322</td>
</tr>
</tbody>
</table>

Source: Cotton Marketing Board, Annual Report, various issues.

18. Of the production figures for communal lands in this table, the share for small-scale commercial farming constitutes 5-9 per cent for different years, while resettlement areas make up 9 per cent for the last two seasons reported.


2.4 Conclusion

At the time of Independence, Zimbabwean agriculture was characterised by a distinct dualism. A high-yielding commercial sector with the capacity to produce a national surplus operated, on the one hand, and was managed by white farmers; alongside this affluent production power, a large African population of subsistence peasants struggled for small yields on poor land.

The objectives set by the newly-independent Government of the Independent State in 1980 were to uphold production levels while attempting to merge the two main modes of production into a common agricultural structure. An integrated strategy involved the adjustment of policy instruments (such as marketing, pricing, credit, inputs, irrigation, co-operatives, research and extension) to suit the altered national priorities. The prior neglect of communal farmers would be rectified without, however, inducing negative spin-off to the large-scale commercial sector.

Zimbabwe has managed, since Independence, to thus maintain exceptionally high levels of agricultural production, in contrast to other Sub-Saharan countries. This is even more remarkable when we contemplate the adverse rainfall conditions during the eighties.

Communal farmers have become significant producers of commercial crops, so much so that of all maize and cotton sold to the Marketing Boards, the lion’s share is supplied by communal lands. During the first decade since Independence, the economic situation for many communal farmers improved as a result of increased yields, and though Government policies have most probably played a substantial role in achieving greater equilibrium of production and yield, the gap in productivity between the commercial and communal sectors remains high. The present report will investigate the contributions made in this respect, through education/training, extension and research.

In spite of Zimbabwe’s impressive agricultural achievement in comparison to other African countries, much remains to be achieved. Other kinds of dualism are beginning to emerge among communal farmers themselves, between farmers operating in different regions with different natural conditions, but also between households of the same area. The difficult situation in the dryland areas has to be tackled seriously, for example, if Zimbabwe is to achieve not only a level of self-sufficiency nationally, but also locally. Here are some of the newest challenges facing authorities responsible for research and extension.
Chapter 3
Development of the education sector

It is generally assumed that education (general, as well as specific agricultural education and training) is a factor which has an impact on agricultural productivity. On the one hand, farmers with some years of basic schooling are more likely to adopt and correctly apply agricultural innovations. On the other hand, training offered at various agricultural service institutions require that applicants have an appropriate background in formal education to be efficient.

In our analysis of the impact of education on agricultural production, educational policies and the effectiveness of their implementation in terms of quality and quantity will be studied. We shall look, in particular, at the programme of vocationalised secondary institutions. At the post-secondary level, various kinds of vocational education/training in agriculture are offered, and will be examined in the next chapter.

At Independence, there was tremendous popular pressure for expansion of education facilities. In periods where harsh economic conditions prevail, the provision of education has to be evaluated not only as a social right to all, but also in relation to its impact on the directly productive sectors. For the agricultural sector in Zimbabwe, this issue is particularly critical since, for generations, educational credentials have provided the individual an escape route from the need to depend upon agricultural work, leaving him instead the possibility to earn a livelihood in 'modern' wage employment (an elusive dream for those without basic educational qualifications).

3.1 Educational policies

3.1.1 Educational priorities

At Independence, three main objectives were drawn up to direct educational strategy

(i) Elimination of racial discrimination
(ii) Expansion of educational opportunity
(iii) Curricular change to increase the relevancy of content.
Education, training and agricultural development
in Zimbabwe

3.1.2 Quantitative expansion

Throughout the period preceding Independence, Education was characterised by racial division. This excerpt from the *Transitional Development Plan* (1982) reveals succinctly the educational situation at this time:

"The educational system provided the white community with more schools, supplied with adequate physical plants, well-qualified teachers, appropriate pupil/teacher ratios, all of which compared favourably with conditions in industrialised countries. The curriculum was relevant to perceived requirements of the white community. On the other hand, the relatively few schools available for blacks were overcrowded, had poor physical facilities, and were manned by less qualified teachers. Education was neither free nor compulsory, and in rural areas, provided primarily by missionaries. A very small percentage of the black population received secondary and tertiary education. At Independence, the State was spending more than 11 times as much per year on a white child's education as on a black one, and in important respects, the curriculum was not relevant for the black child".  

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Racial discrimination, however, was not the only type of discrimination which existed during the period with which this report is concerned; discrimination was equally apparent in terms of the urban and rural divide. For the Government of the new independent state, redressing the discriminatory state of affairs would be a central activity as it would have impact on all other areas of government strategy, and the Education Act stresses that 'every child in Zimbabwe [should] have the right to school education'; compulsory primary education would therefore be highly desirable, and 'tuition for primary education [would] be free'.  

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3.1.3 Schools for all?

The principle of 'school for all' is currently in question as economic trends indicate decline, and there appears to be a shift of emphasis in Government policy on education:

"Although education represents a long-term investment in human resources, its provision needs to be balanced with investment in immediately productive areas if the economy is to sustain the costs implied. The trend so far has been for social sectors such as education to grow at the expense of the productive sectors".  

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The issue at stake really is whether education met a basic social need only, or whether it has contributed also to the productive sector. This raises the question of the quality of the education imparted, and of the relevance of the curriculum.

3.1.4 Educational content

Relevance in the curriculum in both primary and secondary education became an issue for the new government, as important, if not as critical, as that of increased access.


Education was to be an instrument to impart 'new values, attitudes and motivations' which would be related to 'the demand for creative and productive skills in the economy'. There is voiced insistence that '[combining] general education with technical and practical training in productive activities' should be an essential element in the educational strategy. The first Five-Year Development Plan (1982), while acknowledging the quantitative expansion of education, stressed the lack of relevance of curriculum content, and proposed to give compulsory status to science and technical subjects:

"In addition, the secondary school curriculum will be broadened to include a wide range of technical and vocational subjects which are oriented towards the manpower requirements of the production sector'.

The reasoning governing the increased importance of science and technology in education, is clearly expounded:

"At present, science and practical subjects are being given a leading role in secondary schools in order to provide the students with a sound base for technological training. The Ministry of Education introduced the Zimbabwe Science Programme in 1981 in order to solve the problems of manpower shortage and equipment in the teaching of science. This programme has enabled Science to reach all secondary school pupils'.

The vocationalisation of secondary education remained to the forefront at least until the early nineties. The importance of imparting knowledge and skills of a scientific, technological and manipulative nature, in order to equip students with the capacity for self-reliance and encourage them to be initiators and innovators of change, was discussed widely, and remained a high priority in a society where those being educated work afterwards in both formal and informal employment. Recently, however, some policy changes in this respect have been instituted. The proposed implementation of a stronger vocational content in the curriculum has been questioned.

The adoption of vocationalised education within the formal school structure has been the object of perennial debate. Make schooling more relevant to societal needs was a central part of a strategy for African education formulated in 1961 -- but this policy has been highly criticised since. The most important critique against the emphasis on vocationalisation in the 1961 policy was launched by Foster. More recently, a line of argument similar to his has been followed by the World Bank. Basically, the critics claim that vocational subjects at school are not justified from a pure economic point of view, that they do not influence attitudes, and that countries try to find educational solutions to problems which are not primarily education-related. Critiques denouncing attempts to diversify the formal school curriculum towards increased vocationalisation, have, however, been based on a fairly scant empirical data base, without always giving due regard to the wider social dimension of the development concept.

Such has been the rate of expansion of enrolment at the lower secondary level in Zimbabwe that the formal labour market will be in no position for some years to come to


Education, training and agricultural development in Zimbabwe keep pace with the numbers of school leavers; those students leaving the educational system are not likely to find a job in the modern sector, and the question is posed as to whether it would not be better to ensure that the curriculum is oriented towards ensuring a basic understanding of agricultural activity and potential, rather than imparting a negative attitude towards this form of livelihood:

"There is a need for greater attention to be given to the development of skills that will be of practical value to school leavers, life skills that pupils can utilise outside the education system whether it be, for example, in subsistence farming or in small business enterprises or on factory assembly lines".⁵¹

In present circumstances, it is difficult to find a definite economic justification for many projects proposed in African countries, in whatever field. But in the longer term, it is essential that training be provided in a diverse number of fields. Furthermore, it is important that the school be able to offer a variety of opportunities for those students unsuccessful in their search for vacancies either in vocational training or in the formal labour market, such as returning to the land. According to many of those interviewed, students would be willing to return to the land if there was enough land of suitable quality available; the issue therefore relates to the issues of planned resettlement, as well as future modes of production.

Thus, one area of vocationalisation in education has been agriculture. According to one syllabus, the content of the agriculture course should be relevant to farming activities in the surrounding community and include work on the school garden; fieldwork to be carried out in the locality would also be an element of agricultural studies. At present, the Curriculum Development Unit (CDU) -- a unit of the Ministry of Primary and Secondary Education -- is considering making this type of fieldwork in different communities a compulsory part of vocational education in agriculture in order to familiarise students with the factors involved in agricultural skills. Another syllabus has been drawn up for schools without specialised agriculture teachers which stresses the need to 'enable the pupils to develop agricultural skills through practical work' and production. The question is whether these ideas are really implemented in schools, and whether enough teachers can be equipped with the necessary knowledge and skills to be effective.

The Chavunduka Report, issued after Independence, represented an immediate recognition of the importance of agriculture in education, but acknowledged the difficulty of integrating it:

"The Commission welcomes the Government's plans to place greater emphasis on agriculture in schools. Success will depend, however, on ensuring that curricula are well designed in consultation with the appropriate Departments of the Ministry of Agriculture, and that teachers are specially trained in the subject".⁵²


3.1.5 Education with production

'Education with production' sounds the leading concept upon which education in Zimbabwe is hoped to encourage economic and social change. It should be particularly relevant in the case of agriculture. It is perhaps instructive to consider the socio-historical background to this programme:

"It was during the liberation struggle that education with production was first established for Zimbabwean children studying in refugee camp schools in Mozambique and Zambia. They spent half the day on academic work and the other half on productive work. This system enabled the pupils to link learning directly to practice, and was particularly useful because pupils had to provide their own accommodation, furniture and fresh foods. This worthwhile experience planted the first seeds of the new ideology of education for Zimbabwe".53

'Education with production' is often erroneously interpreted to mean that each school should have its own vegetable garden, and that this facility is sufficient and comprehensive in its own right to the provision of agricultural studies in the school. The success of such a programme is evidently more complex, as it implies an integrated theoretical and practical teaching/learning process. For example,

"Science can be studied both within the agricultural context and within the industrial context".54

How successful has educational policy been (since Independence)? This question shall be examined in the next section.

3.2 Implementation of policies - quantity and quality

In order to evaluate the educational policies enumerated heretofore, it will be necessary to analyse the degree to which they have actually been implemented. In this section, an attempt is made to evaluate to what extent a mere quantitative expansion has taken place, and if, and how, it has been possible to maintain quality.

3.2.1 Primary education

3.2.1.1 Expansion

Primary schooling comprises the first seven years of formal schooling, and may be preceeded by a number of pre-schooling years. Ideally, primary schooling caters for children of the 6 to 12 year-old grouping. Gross enrolment rates, computed on the basis of this age group, exceeded 100 per cent for most of the 1980s. This does not mean that everyone however, is enrolled. It has been suggested that an estimated 10 per cent of all prospective pupils actually never enter formal schooling. Also, although information on drop-out rates is difficult to obtain, there are some indications that 5 to 15 per cent of pupils entering first standard never complete primary education.

54. Ibid., p. 107.
Table 3.1 Primary schools and total primary enrolment 1976-90 (in thousands)

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of schools</th>
<th>Enrolment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>3,469</td>
<td>867</td>
</tr>
<tr>
<td>1977</td>
<td>3,510</td>
<td>875</td>
</tr>
<tr>
<td>1978</td>
<td>2,961</td>
<td>811</td>
</tr>
<tr>
<td>1979</td>
<td>2,401</td>
<td>820</td>
</tr>
<tr>
<td>1980</td>
<td>3,161</td>
<td>1,236</td>
</tr>
<tr>
<td>1981</td>
<td>3,698</td>
<td>1,715</td>
</tr>
<tr>
<td>1982</td>
<td>3,880</td>
<td>1,907</td>
</tr>
<tr>
<td>1983</td>
<td>3,960</td>
<td>2,044</td>
</tr>
<tr>
<td>1984</td>
<td>4,161</td>
<td>2,132</td>
</tr>
<tr>
<td>1985</td>
<td>4,234</td>
<td>2,217</td>
</tr>
<tr>
<td>1986</td>
<td>4,297</td>
<td>2,265</td>
</tr>
<tr>
<td>1987</td>
<td>4,439</td>
<td>2,251</td>
</tr>
<tr>
<td>1988</td>
<td>4,471</td>
<td>2,212</td>
</tr>
<tr>
<td>1989</td>
<td>4,507</td>
<td>2,215</td>
</tr>
<tr>
<td>1990</td>
<td>4,535</td>
<td>2,712</td>
</tr>
</tbody>
</table>


Enrolment in primary education has increased rapidly since Independence. It has more than doubled in ten years, highlighting the very low figures recorded for enrolment during the War of Independence. Following such an impressive quantitative expansion, many fear that the present capacity to maintain standards is not sufficient. Pakkiri (1989) noted in an article, that:

"... the objective of universal primary education has already been achieved but critics have questioned the efficiency of the system."

3.2.1.2 Quality

The First Five-Year Plan announced that primary education would not be fee-paying, though the immediate reality following Independence was that parents shared the burden of costs related directly to education provision. At present, fees for primary education are being reintroduced.

Indeed, even if a substantial share of the national budget has been allocated to Education, the funding of schools has become a major problem. After the War, many facilities were greatly lacking, and schools damaged and closed during the War had to be reconstructed. Local communities contributed to a large extent after Independence, according to the principle of cost-sharing; parents contributed to the costs of building schools and provided manpower to construct classrooms. Only some 13 per cent of all

primary schools constructed after Independence were entirely financed by the Government, although in all cases, it fulfilled its role in assuring payment of teachers' salaries.

Once peace was obtained,

"enrolment figures increased so rapidly in some areas that pupils arrived before any buildings were constructed, and classes were held in hastily-constructed pole and dagga (mud) huts with thatched roofs, and in some cases were held in the open under a tree".56

A major problem in recent years has been that of providing enough trained teachers to keep pace with the tremendous increase of student numbers. Books and materials have also been highly inadequate, and the costs of these are often directly carried by the parents. Table 3.2 gives the numbers of primary school teachers employed in 1990, and indicates the proportion among them who are fully qualified.

Table 3.2 Primary school teachers, and proportion qualified (selected years)

<table>
<thead>
<tr>
<th>Year</th>
<th>N* of teachers</th>
<th>(%) qualified</th>
</tr>
</thead>
<tbody>
<tr>
<td>1979</td>
<td>18 483</td>
<td>(91)</td>
</tr>
<tr>
<td>1983</td>
<td>50 937</td>
<td>(38)</td>
</tr>
<tr>
<td>1985</td>
<td>56 691</td>
<td>(40)</td>
</tr>
<tr>
<td>1988</td>
<td>57 762</td>
<td>(51)</td>
</tr>
<tr>
<td>1989</td>
<td>58 370</td>
<td>(51)</td>
</tr>
</tbody>
</table>


In 1988, 41 per cent of all teachers in primary education were not qualified, and another 7 per cent were teacher trainees: only approximately half of the teachers, therefore, were fully-trained for their profession.

Had it been possible to train teachers rapidly, another problem would have arisen: that of 'creating a salary bill that the government could not pay'57, so that a short-term policy of continuing to use a high proportion of unqualified teachers would appear to be fairly reasonable.


3.2.2 Secondary education

3.2.2.1 Expansion

The aim of universal schooling beheld new ideals following Independence when not only primary education, but secondary also, comprised the new concept of what 'universal education' should mean. All children were given the right, in principle, to proceed directly to secondary school. On average, some 75 per cent of the students secure a place in this way.

Secondary education is divided into a lower cycle (4 years) and an upper cycle (2 years), and ideally caters for those aged between 13 to 18 years. Enrolment rates based on these ages are given in Table 3.3.

Table 3.3 Enrolment rates in secondary education, 1978-87

<table>
<thead>
<tr>
<th>Year</th>
<th>Enrolment rates (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1978</td>
<td>9</td>
</tr>
<tr>
<td>1979</td>
<td>15</td>
</tr>
<tr>
<td>1980</td>
<td>13</td>
</tr>
<tr>
<td>1981</td>
<td>15</td>
</tr>
<tr>
<td>1982</td>
<td>23</td>
</tr>
<tr>
<td>1983</td>
<td>39</td>
</tr>
<tr>
<td>1984</td>
<td>39</td>
</tr>
<tr>
<td>1985</td>
<td>43</td>
</tr>
<tr>
<td>1986</td>
<td>46</td>
</tr>
<tr>
<td>1987</td>
<td>45</td>
</tr>
</tbody>
</table>


It may be noted from the table that a few years after Independence, secondary education was no longer the privilege of a small minority. However, school fees which are often quite high, are required at this level, so that secondary education is not, in practice, available to all. In spite of this last factor, the 'eleven years education for all' policy in Zimbabwe has been a point of much debate in recent times.

In total figures, enrolment has increased by twelve times in one decade (Table 3.4), an achievement assured through strong community involvement. Enrolment in secondary schools wholly maintained by the Government was, in 1988, only 30 per cent of the total figures for secondary school enrolment.
Table 3.4 Secondary schools and secondary enrolment 1976-90 (in thousands)

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Schools</th>
<th>Enrolment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>208</td>
<td>69</td>
</tr>
<tr>
<td>1977</td>
<td>211</td>
<td>71</td>
</tr>
<tr>
<td>1978</td>
<td>190</td>
<td>71</td>
</tr>
<tr>
<td>1979</td>
<td>177</td>
<td>66</td>
</tr>
<tr>
<td>1980</td>
<td>197</td>
<td>74</td>
</tr>
<tr>
<td>1981</td>
<td>694</td>
<td>149</td>
</tr>
<tr>
<td>1982</td>
<td>738</td>
<td>228</td>
</tr>
<tr>
<td>1983</td>
<td>790</td>
<td>316</td>
</tr>
<tr>
<td>1984</td>
<td>1,182</td>
<td>416</td>
</tr>
<tr>
<td>1985</td>
<td>1,215</td>
<td>482</td>
</tr>
<tr>
<td>1986</td>
<td>1,276</td>
<td>537</td>
</tr>
<tr>
<td>1987</td>
<td>1,395</td>
<td>605</td>
</tr>
<tr>
<td>1988</td>
<td>1,484</td>
<td>641</td>
</tr>
<tr>
<td>1989</td>
<td>1,506</td>
<td>671</td>
</tr>
<tr>
<td>1990</td>
<td>1,518</td>
<td>939</td>
</tr>
</tbody>
</table>


3.2.2.2 Quality

The issue of the quality of the teaching process as opposed to the quantitative expansion of the secondary education sector is an area of concern. In 1988, 40 per cent of all secondary school teachers were untrained, 9 per cent were teacher trainees, and many secondary school teachers had to be recruited from overseas countries. Also, since not enough facilities were available initially, many schools had to use a double shift system. Secondary education thus faces problems similar to, not to say worse than, those which concern the primary sector: problems related to infrastructure, books, equipment etc.

This is particularly true in respect to science and technology subjects. Numerous interviews revealed a belief held that knowledge of science was inadequate among secondary school graduates. In an article published in the *Sunday Mail* of 7 October 1990, the Dean of Science at the University of Zimbabwe, Professor Chetsanga, praised the quantitative expansion at school, but notes that:

"The big challenge for this country now is to improve the quality of science teaching in secondary schools. The proper development of secondary school science education is seriously handicapped by the lack of qualified science teachers."

*58. The Sunday Mail, 7 October 1990.*
He referred to the subjects of biology, chemistry, physics and mathematics as the key science subjects. It is certain that if post-secondary education in agriculture is to be effective, improvement of science teaching at secondary level will first be necessary.

Other references to the poor quality of science in secondary school teaching in Zimbabwe have been made publicly in recent times. Instructors at Agricultural Institutes and Colleges claimed that their students, who were admitted entry to studies on the basis of O-level examinations, had a background in science that was totally insufficient.

Science kits have been distributed to secondary schools to alleviate some of the problems, but even the science kits programme, Professor Chetsanga insists, has unfortunate limitations: "The Zim-Sci kit has serious limitations in the absence of a well-trained cadre of science teachers".

The establishment of the National University of Science and Technology in Bulawayo (see below) is hardly likely to ease the situation in the short-term. This University will train teachers, but its main purpose will be to provide manpower in science and technology for the industrial expansion. In the meantime, there is a waiting time before a completely new institution produces its first graduates. Professor Chetsanga believes the solution lies in the upgrading of one of the teacher training colleges to a Science Teachers' University.

Universal education in the primary sector has been a goal among many African countries, but universal education as a goal for the secondary education sector is an objective exclusive to Zimbabwe in the African context. It has created its own problems for school-leavers there by, perforce, raising their expectations. The quantitative development has put pressure on the labour market: upon succeeding at O-level, many students migrate to urban areas to look for wage employment; alternatively, they try to enrol in some kind of post-secondary education/training.

Since access to upper secondary education is rather restricted, competition for vacancies in a variety of vocational training programmes, and for formal wage employment has become tough. By encouraging students to proceed to O Level, the Government has unwittingly encouraged a demand for education at this level that simply cannot be sustained by facilities as they stand, nor as they may reasonably be expected to develop in the near future.

3.2.3 Tertiary education

3.2.3.1 University of Zimbabwe

There is at present only one university in the country, the University of Zimbabwe. It was established in 1955, as the University College of Rhodesia and Nyasaland, became the University of Rhodesia in 1971, and was renamed the University of Zimbabwe following Independence. There are ten Faculties at the University: Agriculture, Arts, Commerce, Education, Engineering, Law, Medicine, Science and Social Studies. The Faculty of Agriculture was established in 1980; before this date, activities and research in the subject were carried out under the governance of the Faculty of Science.
Development of the education sector

The enrolment figure for the University College of Rhodesia in 1955 was 68 students. The renamed University in Independence Year enrolled 2,240; the enrolment figure at the University for 1989 was 9,288. Academic posts have increased from 322 in 1980, to 739 in 1989. (Of note in relation to the 1989 figure, is that 25 per cent of the existing posts were held vacant at this time.)

It was decided recently to build a new University to be located in Bulawayo which would specialise in science and technology. A Research and Development Centre will be built under the University mandate, and seven Faculties are proposed: Science, Industrial Technology, Architecture and Quantity Surveying, Environmental Sciences, Communication Technology, Commerce and Humanities, and Arts and Education. A Faculty of Agriculture was not deemed necessary.

3.2.3.2 Other institutes of education at post-secondary level

Other post-secondary educational institutions include Teacher Training Colleges for Primary Education (11), Teacher Training Colleges for Secondary Education (4), Technical Colleges (5) and one Polytechnic; all of these institutions offer diploma and certificate courses. Certain Ministries, the Ministry of Agriculture included, offer their own courses.

3.3 Agriculture in primary and secondary education

As mentioned earlier, various attempts have been made to revise the curriculum and to include agriculture among the subjects taught at primary and secondary level. The lower primary and lower secondary school curricula have been reoriented so as to ‘sensitise students to the problems ... of the peasantry’. A recent review of primary school education concluded that agricultural education could ‘provide agricultural knowledge and skills, and make the teaching of science and environment education more relevant and effective.’ Doubts were nonetheless expressed as to the impact the subject at this level could have on influencing attitudes, reducing educational costs and on general agricultural development.

Agriculture at school is offered as an individual subject; it also involves overall curricular change and textbook adjustment:

"... mathematics might include simple accounts using typical farm and market examples; science studies would start by analyzing elements in familiar environments with a little time in laboratories".\(^59\)

In harsh economic conditions, any curriculum diversification must be weighted against the total educational resources. Where agriculture is given priority on the curriculum, funding may have to be withdrawn from other areas, such as the improvement of reading, writing or science education. On the other hand, the cost of curriculum reform could be pitted against the value of quantitative expansion. In such a perspective, priority could be given to quality and to a wider diversity within the syllabus to include science and

agriculture. Increased enrolment rates in worsening teaching conditions, is of no value without a corresponding expansion in labour market opportunities.

The whole issue of agriculture in the curriculum can be seen as a worthwhile subject for more detailed empirical research; yet there is not enough knowledge of the actual function of this subject, nor of other attempts to diversify the curriculum. Without a much more systematic attempt to evaluate various attempts to diversify education, particularly in agriculture, it is difficult to go beyond mere guesswork in evaluating its impact on students and society. A survey investigating thoroughly the actual implication of the programmes is both desirable and necessary.

3.3.1 Agriculture in primary schools

In primary schools in Zimbabwe, agriculture is an individual subject on the curriculum. At Standards 1 to 3, it offers a specifically community approach. Standards 4 to 6 focus attention on national conditions in Zimbabwe, and for the years following, the subject content is more general and includes study of African and world agriculture.

One extension worker related during an interview that he was actively involved in teaching soil conservation as part of the agricultural education programme in a number of primary schools. The extent to which schools, in general, involve local agricultural expertise or farmers, however, is not known. A community-based school agricultural programme would probably gain a lot if it could be partly integrated with the extension services, where benefits would be mutual to both educational and production sectors, and constitute a valuable asset to local agricultural development. A view held by many at AGRITEX is that their opinions have been ignored by those involved in the formulation of the school curriculum.

One highly significant change in the curriculum was the move to involve the teaching of agriculture with that of production. In the Annual Report of the Secretary for Primary and Secondary Education in 1988, it was noted that:

"Agriculture has not yet been fully integrated into the science course. It continued to be one of the main activities of Education with Production, which significantly augmented the resources of schools. An increasing number of schools included animal husbandry and fish-farming in their activities. Some schools were innovative in their Education with Production projects, some of which were supported by local farmers".  

3.3.2 Agriculture in secondary schools

Agriculture in the secondary school curriculum has been vocationalised also. The subject is now offered in more than 1,000 schools. The introduction has not been a perfect success, however; many schools have not got access to land on which to teach the subject, and the subject content is therefore often more theoretical than practical. Besides, like other technical subjects, this subject area is not recognised as being a necessary entry requirement to higher education.


3.3.2.1 Specialised teachers in agriculture

During discussions at the Ministry for Primary and Secondary Education, it was argued that the teaching of agriculture varies greatly according to the interest of individual teachers. The acquisition of skilled and dedicated specialised teachers was believed to be the key to an efficient application of curriculum content. The number of teachers specialising in agriculture should be higher in the future as graduates of agricultural colleges/institutes choose to become involved in education; deployment of graduates from Colleges of Agriculture has already improved the quality of teaching of this subject in the schools.

From interviews at the agricultural colleges/institutes (see Chapter 4), it was learned that most of the students who graduated from the institutions actually entered the 'teaching profession' as untrained teachers. The existence of the Gweru teacher training college and the Belvedere TTC (Harare) should now provide graduates with an opportunity to obtain a teaching qualification; it means that there is a system of teacher training for graduates in agriculture.

There was a total enrolment of 73 (38+35) teacher trainees, in two simultaneously-held courses at Gweru Teacher Training College in September 1990. A requirement for acceptance on the course included experience in either practical agricultural work or in teaching. The training was of 16 months' duration, and students who completed the course successfully qualified as specialist teachers in agriculture.

Some 200 agricultural teachers have graduated with a certificate at Gweru TTC since 1982. The majority of them are presently teaching, while others are now registered for the Bachelor of Education programme at the University of Zimbabwe. The demand for this course appears to be great, with some 200 candidates competing annually for 35 available places. Selection is done through a combination of practical and academic examinations. The course itself is a combination of pedagogical training and practical work in agriculture, although since students have generally already trained at agricultural colleges/institutes, the emphasis on the latter might seem rather unnecessary; but having qualified in this subject from specialised colleges or institutes is not sufficient to enter the teaching profession directly.

The short-term forecast is that the number of specialist teachers graduating in agriculture will not be sufficient to cater for the high student numbers in secondary education, and that in the near future, unqualified teachers from agricultural colleges/institutes will continue to provide the requisite personnel.

3.4 Education with production

A special role in promoting agriculture in school is held by an NGO called ZIMFEP (Zimbabwe Foundation for Education with Production). It operates within the general educational structure, but could be regarded more as an initiator of curriculum change. There are at present 12 such schools (at the primary and secondary level), all located on farms; although they receive donor funding, these schools are highly self-reliant.
ZIMFEP believes that the normal school curriculum in agriculture is too academic. An evaluation of ZIMFEP carried out in 1987 indicated that within its own activities, the 'traditional curriculum is still dominant', that its schools achieved only limited integration between theory and practice, and that 'school pupils tend to be used as labourers on the farms rather than as learners'.

The Organisation has not been duly worried by the adverse criticism, and insists that pupils learn to understand what they are doing at the farms; they are therefore introduced to, and try out new techniques during the course of training. Many ordinary schools are interested in being associated with ZIMFEP, and 400 schools have now affirmed associate relationship status with the Organisation.

The dominant objective within the Organisation is to create a more positive attitude towards agriculture through the formal school system; it is too early to be able to measure the extent to which it has succeeded in this respect.

3.5 Adult education

It was noted earlier that most communal farmers are women who would have been above school-going age at the time of Independence. These women would benefit from admission to one of the adult literacy programmes now offered by the Ministry of Primary and Secondary Education. 80,000 learners were enrolled in 1988, directed by 5,000 tutors. Materials prepared for the programmes were to develop literacy and numeracy skills, as well as practical skills in crop and livestock training. Such courses were a completely new activity, introduced by the Independent State:

"Under colonialism, there was not a literacy campaign for the half a million illiterate adults. The campaign had begun at Independence, and to date, more than 300,000 adults have been in literacy classes and more than a million literacy books and other reading materials have been produced to assist in the eradication of illiteracy".¹

Many extension workers see adult literacy courses as being a valuable complement to their own training.

3.6 Conclusion

At Independence, the social pressure of demand for education was immense, and a key objective for the new government was to expand enrolment, an objective which was achieved.

In development planning, social demands have to be measured against economic realities; within a holistic approach, priorities have to be decided among conflicting goals. Quantitative expansion in education has had the effect of being detrimental with respect to quality, so that a situation now exists where school output is not of the standard set by either vocational training institutions, or by the formal labour market.

In a short-term perspective, especially in a newly-independent nation, meeting popular demand for more expanded educational facilities may take on great importance. However, in the long-term, a more moderate growth with stronger emphasis on quality issues is an approach of more benefit in terms of economic reality and equality.

In contrast to the views often offered by those involved in the international debate on vocationalisation in education, Zimbabwe has, at least until the recent past, held an independent line favouring diversification. The inclusion of agriculture in the primary and secondary school syllabus is evidence of such an approach. If we assume that education should reflect the society of which it is a part, it would be difficult to decide to exclude some form of agricultural studies in the school curriculum. Continued research in this area could provide a valuable material for the debate.

The degree of success of the introduction of agriculture in the curriculum is dependent upon various factors: the availability of dedicated specialised teachers is a prerequisite; emphasis on the practical side of the subject is essential; close co-operation with the local extension services (which appears to have been, until now, to a great extent neglected) has the potential to make education more relevant. Budgetary constraint is the main crux of the promotion of agriculture in schools, and policy decisions should be based on the necessity of improving quality as much as on expanding student numbers.

For vocational training in the field of agriculture, there is a demand for school graduates with a good background in science, yet indications have shown that students with such a background are not numerous. It would be reasonable to expect that for admission to agriculture-related higher education, priority would be given to those who have a secondary school background in that subject: but this is not the case at the present time.
Chapter 4
Agricultural education and training

Post-secondary education is assumed to be highly correlated to agricultural development. The impetus which either confirms or nullifies the validity of this supposed relationship lies with the real capacity of post-secondary agricultural education to provide personnel with the skills required by the services of the agricultural sector.

This chapter will give an account of vocational agricultural education and training, including in-service training for personnel employed by the Ministry of Agriculture. It will also analyse the performance of educational institutions in relation to their set objectives, and distinguish what the difficulties hampering efficiency in education are.

4.1 Objectives of agricultural education and training

The main objective of agricultural education/training is to provide the Ministry with personnel, primarily for extension and research services.

Basic education for the extension services at AGRITEX is provided by two colleges and four institutes. Since the early 1980s, the main task for programmes in this field has been to neutralise the staff shortage in the extension services. Chibero and Gwebi Colleges both offer a two-year course leading to a Diploma in Agriculture, and all senior staff at AGRITEX, whether at central, provincial or district level, are expected to have obtained this diploma.

There are four agricultural institutes: Mlezu, Esigodini, Rio Tinto and Kushinga-Phikelela. These institutes prepare students for a certificate which is the formal basic qualification for extension workers (i.e., field personnel in direct contact with farmers at local level). At Independence, the Chavunduka Report recommended, ‘that the expansion of Esigodini and Mlezu Agricultural Institutes be implemented urgently and that attention be given to ensuring that there is an adequate output of female extension workers’.

A special division within AGRITEX is responsible for training. It is assumed that graduates from agricultural colleges and institutes recruited by AGRITEX ‘possess agricultural skills in crop husbandry, livestock and machinery, as reflected in the reviewed syllabus’, and upon recruitment, training is provided in extension methods.


Higher-level courses related to agriculture are organised by the University of Zimbabwe, and its Faculty of Agriculture offers specialised courses to researchers, agronomists etc. Other faculties at the University provide training for upgrading Ministerial staff.

4.2 Agricultural colleges and institutes

All Colleges and Institutes offer agricultural courses on a two-year basis. In a Report of the Commission of Inquiry into the establishment of a second university, other issues were raised:

"The Ministry of Lands, Agriculture and Rural Resettlement also co-ordinates in two slightly different modes the training and examination of its colleges and institutes. The two colleges, Chibero and Gwebi, admit students who take the same national diploma examination and are completely integrated for academic purposes. But the four Institutes (Mlezu, Esigodini, Kushinga Phikelela and Rio Tinto) offer their own individual certificates which are not fully co-ordinated in the absence of an inspectorate division. The certificate course offered by the institutes does not lead to the diploma course in the colleges. Curiously, the two levels of training have identical entry requirements and duration of course. While there are historical reasons for these anomalies, there is a need to re-examine the course offerings at the colleges and institutes by using more fully the Ministry's co-ordination machinery. The Commission was made aware of some frustrations in the agricultural training institutions. The staff of one of these institutions pointed to a lack of training opportunities and of staff development programme while at another, the entire staff favoured integration with other tertiary institutions to facilitate harmonisation of salary structures, conditions of service and recognition of certificates. All this boils down to the need for better co-ordination and standardisation". 65

4.2.1 Historical background

Most of the agricultural colleges and institutes have inherited a tradition from pre-Independence days when quality training was provided for the 'white' commercial agriculturists, and when the training offered for the majority population was of a more general vocational type.

Gwebi College, for example, was opened up in 1950 to train young whites who would later take over their parents' farms. In 1980, the College was amalgamated with Norton College, which had originally been set up to provide agricultural training for members of the black population; the first black students (eight in number) were accepted at Gwebi in this year.

The two largest agricultural institutes in operation at present began as vocational centres for Africans during the colonial period. Mlezu, located in the Midlands province, was opened in 1959 as a vocational training centre for grade six leavers; training was provided under two main stream options -- agriculture and technology (building and carpentry). Training for extension assistants on communal lands was provided here also.

and the Institute's location in this respect was appropriate since the land quality in the
Midlands province was believed representative of the quality of communal land in general.

Esigodini, in Matabeleland South, was originally opened as a Primary School in
Tsolothso, with a curriculum comprised of agriculture, building, carpentry, metal- and
leather-work. Mlezu and Esigodini were transferred to the Ministry of Agriculture in 1977
and 1969 respectively.

Kushinga-Phikelela, outside Marondera, was established at Independence as a
training centre for ex-soldiers. During its first few years, it was run privately through funds
from local and overseas donors, and provided training in agriculture and commercial
subjects. In 1983, it was taken over by the Government, and its previous mandate to provide
training in agriculture was taken over by the Ministry of Agriculture.

The smallest of the institutes was set up by the Rio Tinto Mining Company as a skill
training centre. It was taken over by the government in 1984, after the mine had been closed
down. There is, evidently, a long tradition of agricultural training in Zimbabwe, and one of
the main tasks of the government since Independence has been to adjust the existing
structures to present demands.

4.2.2 Students

The total enrolment at agricultural colleges and institutes for 1979-87 are given in
Table 4.1.

Table 4.1 Total enrolment at agricultural colleges and institutes 1979-1987

<table>
<thead>
<tr>
<th>Year</th>
<th>Total enrolment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1979</td>
<td>171</td>
</tr>
<tr>
<td>1980</td>
<td>173</td>
</tr>
<tr>
<td>1981</td>
<td>560</td>
</tr>
<tr>
<td>1983</td>
<td>n/a</td>
</tr>
<tr>
<td>1984</td>
<td>610</td>
</tr>
<tr>
<td>1985</td>
<td>888</td>
</tr>
<tr>
<td>1986</td>
<td>875</td>
</tr>
<tr>
<td>1987</td>
<td>1002</td>
</tr>
</tbody>
</table>

Second University or Campus, p. 7

Since 1987, total figures for enrolment have remained at much the same level. Some
500 students graduate annually with the two-year diploma or certificate course from the
colleges and institutes.

All of the institutes and colleges share the same minimum entry requirement of five
O levels, but the selection procedures differ.

At Gwebi College, 150 candidates are selected annually to attend three days of
interviews. Students may be shortlisted according to their examination results in science.
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The final selection is determined by the results of written tests, and practical work on the land (the latter is intended to highlight which applicants have a special interest in agriculture). On the basis of the theoretical and practical tests, some 70 provisional opportunities are offered.

Since Independence, more than 300 graduates have completed the course successfully at Gwebi, while a slightly higher number have graduated from Chibero. In recent years, the total enrolment at each college was allowed to increase from 80 to 120, in response to a perceived demand from AGRITEX. At the last round of examinations, however, only 82 actually graduated with a diploma.

Applicants admitted are required to work on a commercial farm in order to become accustomed to farm life and necessary skills. Due to financial and other constraints, prospective students are not monitored by Gwebi staff during this farmwork. The year-out spent in on-the-job training on a farm is what primarily differentiates between the training provided by the colleges and institutes.

Students graduating from institutes share a similar background as those graduating from colleges, although, unlike college graduates, they are qualified to work only as extension workers in the field. Selection procedures differ according to the institutes, but all institutes, Esigodini excepted, put selected applicants through a series of practical and theoretical tests where applicants are shortlisted with due regard to science education. At Esigodini, the only determinant factor is O-level results, and no particular consideration is given to individual subjects. There appears to be a great interest among students who have succeeded in their secondary school examinations, to attend the institutes; a spokesperson for one institute told us that 16,000 applicants had already been received at his institute for the 1990/91 enrolment.

The largest of the institutes is Mlezu, with a total enrolment of 300: 150 are selected annually for courses offered over two years. Total student numbers for the other institutes are as follows: Esigodini, 200; Kushinga-Phikelela, 150; Rio Tinto, 120 (in 1988/90, Rio Tinto selected only 48 candidates).

The total potential enrolment at the agricultural institutes now stands at close to 800 students. Not only has the enrolment in Esigodini and Mlezu expanded, but two more institutes have been created in response to the requirements forecast by the Ministry of Agriculture at the time of Independence (see 4.1). Despite efforts to provide more facilities, it appears that the institutional capacity is not yet sufficient to deal with the present student intake: a spokesman for one institute confirmed during an interview that the authorities at his place of work had formally requested the Ministry to agree to a decrease in intake for that institute.

Drop-out rates given for the institutes are very low. A number of female students dropped out before completing the two years due to pregnancy, and a number left to take up employment.
4.2.3 Curriculum

In principle, the timetable is divided in a ratio of 50:50 between practical and theoretical studies. At both the colleges and institutes, three main subjects (animal and crop husbandry, and agricultural engineering) are taught. At colleges, one further subject — farm management — is offered.

In this way, agricultural education, in theory, trains general practitioners for a variety of tasks, and those who graduate have competence in a wide variety of agricultural-related technical skills. The actual training of extension methods proper is left to AGRITEX.

During our discussions relating to courses offered at the institutes and colleges, many people aired the view that two years of training was insufficient for market needs, and that at least one extra year in training was desirable.

4.2.4 Staffing

The economic conditions in which agricultural education is forced to operate are particularly austere, and this manifests itself more clearly in staffing and equipment limitations than elsewhere. In 1988, a total of 68 posts were established at the colleges and institutes, with at least 11 of these posts remaining unfilled.

Colleges

There are two categories of teaching staff at the agricultural colleges: lecturers, who in general hold a degree, and instructors who are recruited with an agricultural diploma and work experience.

It is established that at least seven lecturers should hold posts at each college, but attracting lecturers to remain in education rather than work in other more remunerative fields is a major problem. The principal of Gwebi, Cde Bazibi Maphosa, said his college (which recently lost three lecturers to another part of the employment market) continued to lose staff to better-paid posts. Not only was the college deprived of three lecturers (40 per cent of its lecturing staff); another of the remaining instructors had to be deployed, in consequence, as a farm manager.

Institutes

At the institutes, the teaching staff is made up of instructors (who hold at least a diploma) and assistants (who have generally graduated with certificates). Some instructors have completed a teaching course, and others, training in extension methods. All the institutes appeared to be under-staffed, and could not assure the instruction of smaller groups which is a necessary prerequisite for teaching practical subjects. Furthermore, as well as carrying out their own duties, the teaching staff perform the duties of principal, vice-principal, farm manager and supervisor.

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4.2.5 Equipment

Besides an acute shortage in staffing, funds for teaching equipment are quite insufficient. At the last graduation ceremony in Gwebi (1990), the Chairman of the Agricultural Marketing Authority, Mr Msipa, said:

"More funds are also needed in order to make it possible for the College to acquire new farm and teaching equipment, especially farm machinery".  

Control of and access to farmland is an essential teaching ‘instrument’. All agricultural colleges/institutes have large farms for instruction purposes, but the acreage is grossly under-utilised, mainly because of limited resources. Farm revenue goes directly into the National Treasury, while allocations for the purchase of fertilisers, seeds, stockfeeds and veterinary medicines are inadequate.

General teaching materials, as well as more specialised agricultural equipment, are in short supply. No institute owns a bus. One institute borrows a vehicle to take students on field trips. Tractors are often not in use for want of repair. During a visit to one institute, we learned that there was no science laboratory, but that it was necessary to have one because the knowledge of science among first-year students was inadequate. On the matter of pedagogical tools, envious comparisons were made with AGRITEX which appears to be much better equipped. A comparison between the two sectors of the Kushinga-Phikelela Institute, which are governed by different Ministries, vividly illustrated the meagre resource allocation to agricultural education. Foreign donors, such as DANIDA, had provided funds to be used in equipment acquirement for agricultural education. Very little of the finance allocated was available however: funds seem to have been re-allocated, and equipment used for purposes other than training.

One way out of the financial dilemma could be to make the colleges/institutes more independent. This would be in line with a general policy change presently under way in Zimbabwe. A revolving fund has been suggested for Gwebi. According to Mr Msipa, ‘such a revolving fund would be in line with the Government’s policy on state enterprises being self-sufficient.’ If farms could be run on more commercial terms, perhaps training would become more efficient.

4.2.6 Labour market prospects

As noted above, the enrolment for the colleges and institutes was increased to meet a perceived demand from AGRITEX. With the present output of graduates, it would be possible to improve the farmer/extension worker ratio substantially. However, AGRITEX lacks the necessary funds to expand: financial costs would have to cover salaries, transport, housing and further training.

Graduates are presently going into diverse careers, such as teaching (see Chapter 3). As will be seen in the next chapter, many are also now recruited for other duties, such as


68. Ibid.
research, by the Ministry of Agriculture. Of the 39 graduating from Gwebi in 1990, 17 had secured employment upon graduation: seven of these were recruited by AGRITEX, four went into teaching and three into farm management.

Graduates are encouraged to venture into farming independently. For this, necessary financial support for land and equipment should be made available, but experience to date has proven this to be extremely difficult. A case in point is a recent attempt by some ten students from an institute to form a co-operative: despite their proven ability, interest and enthusiasm, financial assistance was impossible to secure.

Since AGRITEX is not, in any case, able to absorb most of those graduating in any one year, many officials would prefer to see a three-year course for qualitative reasons. This would result in a smaller quantitative output. Extended training at the student level would also have the positive effect of lessening the present need for in-service training at AGRITEX, the cost of which is very high, limiting, in fact, the recruitment capacity of this institution.

Another factor which points in favour of extending the two-year course to a duration of three-years is that the present basic training at certificate, diploma and graduate levels does not seem to prepare personnel adequate for either research or extension, nor for direct production. While it is acceptable that educational institutions do not produce personnel prepared for every aspect of work in the agricultural employment market, it is also true that in-service training cannot be expected to correct the inadequacies in basic training. The amount of time and money spent by Agritex on in-service training for those recruited at each level has increased significantly in recent times. That this training input is necessary for new recruits to contribute positively to extension activities is evident, but would also be reasonable were the training time reduced. This highlights the need to create more formal links with agricultural training institutions.

On the question of balance between the importance of ensuring agricultural skills and training in extension methods, the point has been made that Agritex is not the main employer of graduates; other employers request that graduates have a broad rather than a specific background in agriculture. Whichever the strategy chosen, its implementation will need to be determined after a careful analysis of the educational objectives. Closer co-operation between AGRITEX and agricultural education would seem to be imperative to ensure success.69

4.2.7 Training of women

One objective at Independence, as we have seen, was to increase female participation in the extension services. The Commission noted that in many communal areas, most farming was done by women.

Almost exclusively, extension workers tend to be male and the output from the training institutions is also predominantly male. The need for female extension workers and officers is evident.\textsuperscript{70}

At the agricultural colleges, one-third of the total student body is female. It is claimed that qualified female applicants are difficult to find, but those selected have integrated well. Chibera began to admit female students six years ago. One noticeable event following the 1989 examinations was that for the first time in the 30-year history of Chibera College of Agriculture, a female student came top of her class.\textsuperscript{71} At the Institutes, about 25 per cent of the students are female, and they apparently get along well in training. Mlezu was, in 1980, the first institute in Zimbabwe to admit female students. Rio Tinto is the only one without a female student intake, and this due to a lack of dormitories.

In comparing these statistics to those for other agricultural education institutes, it is noted that few students at the Faculty of Agriculture at the University were said to be female. For Gweru TTC, on the other hand, among the last group of 38 to graduate, ten were female.

4.3 In-service training at AGRITEX

4.3.1 Courses for extension workers

Extension workers recruited at AGRITEX generally undergo mandatory training in eight courses within the first 24 months of employment. The courses are as follows:

(i) Induction (administration)
(ii) Extension methods
(iii) Programme planning
(iv) Farming systems and the package programme concept
(v) Package programme, related to area and adaption
(vi) Liaison/coordination skills
(vii) Conservation
(viii) Skills course for trainers/instructors

These courses are organised at the provincial level. In addition to formal training, the new employees are involved in on-the-job projects dealing with actual extension, supervised by an experienced extension worker or senior staff member.

During interviews, we understood that there is presently a serious backlog in training at AGRITEX, which is aggravated, it is believed, by the fact that new recruits are not adequately trained. This justifies the request for a longer pre-employment course.

After the first obligatory courses, extension workers at AGRITEX are then trained for more specific tasks related to the area of activity. As part of the training, briefings are conducted on seasonal requirements and programmes, and the sessions are carried out by


\textsuperscript{71} \textit{The Herald}, 8 October 1990.
agricultural extension officers in co-operation with provincial training specialists. Through a decentralisation programme, the provincial administration is charged with the task of identifying training needs, organising an annual training programme and evaluating progress.

4.3.2 Courses for senior staff

Newly-recruited agricultural extension officers and subject matter specialists are obliged to attend a number of training modules within the first three years of service.

The agricultural extension officers must complete the following 15 courses during the three-year period, and succeed in the examinations which follow each course:

(i) Induction
(ii) Air photo interpretation
(iii) Land use panning I
(iv) Land use panning II
(v) Conservation I
(vi) Conservation II
(vii) Field management I
(viii) Field management II
(ix) Public speaking
(x) Agronomy foundations
(xi) Farm management I
(xii) Extension methods
(xiii) Irrigation A
(xiv) Programme planning
(xv) Animal production

If an employee fails to pass the module examination, he/she will be required to attend that course for a second session. Particular courses may be modified or others added, according to changing national and organisational priorities, and local requirements. Most of the courses demand project work to be conducted both before and after the course. Subject matter specialists are trained according to their particular field of duty. A schematic overview of agricultural extension courses is given in Figure 2.

4.3.3 Special courses

As an example of more specialist courses, we can mention training connected to cotton production organised by the Cotton Training Institute. Extension workers in this field participate in an 18-day course. Agricultural extension officers and research staff attend a two-week cotton regional training course. These courses not only complement courses provided by AGRITEX, but fill a vacuum within the existing course structure of that organisation.
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Figure 2. Human resource development at AGRITEX

Table 4.2 shows that 938 extension workers have been trained in cotton production courses by the Institute. An evaluation carried out concluded that:

"Extension workers are provided a fairly comprehensive cotton extension programme, and have a high degree of credibility with farmers".\[^{72}\]

Table 4.2 Training courses for AGRITEX personnel at the Cotton Training Institute

<table>
<thead>
<tr>
<th>Year</th>
<th>AEO</th>
<th>EW</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>-</td>
<td>159</td>
</tr>
<tr>
<td>1982</td>
<td>-</td>
<td>137</td>
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<td>1983</td>
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<td>156</td>
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<td>1984</td>
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<td>1985</td>
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<td>1986</td>
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<td>132</td>
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<tr>
<td>1987</td>
<td>21</td>
<td>79</td>
</tr>
<tr>
<td>1988</td>
<td>24</td>
<td>26</td>
</tr>
<tr>
<td>1989</td>
<td>14</td>
<td>98</td>
</tr>
<tr>
<td>Total</td>
<td>95</td>
<td>938</td>
</tr>
</tbody>
</table>


4.3.4 AGRITEX publications

AGRITEX has excellent facilities for the publication of materials used in training, and it publishes material in the Shona, Ndebele and English languages. A mobile training unit now has video equipment also.

4.4 Agriculture-related education at the university

Contributions made by the university to development include ‘satisfying the human resources needs of the growing economy, and indeed producing the innovators and other enterprising people who will, by their talent, create economic opportunity for others’. A special task is to ‘provide leadership in research, both basic and applied’.\[^{73}\]

The university organises training courses for senior administrative staff of the Ministry of Agriculture, and for agronomists, veterinaries and agricultural researchers. Responsibility for these courses lies primarily with the Faculty of Agriculture.

4.4.1 Faculty of Agriculture

The Faculty of Agriculture of the University of Zimbabwe was created at Independence. Previous to this, agricultural courses had been provided by the Faculty of Science. At the undergraduate level, there are four areas of specialisation: animal, crop and soil sciences, and agricultural economics. Each may be studied for the Bachelor of Science Degree, and in all areas, courses are of three years' duration, including three months of on-the-job training. ⁷⁴

B.Sc. degrees in Agriculture are popular among students. One obvious reason for this is that these courses qualify students for a professional career, and graduates generally succeed in finding employment immediately following their studies. To study for a Bachelor of Science Degree, whatever the specialisation, a good grade in science at the secondary school examination is required. Candidates with a Diploma in Agriculture may also be admitted, if they are recognised to have the approved standard.

The first degree cycle began in 1980, and 12 students were admitted. At the last intake, this had increased to 110 students, most choosing to specialise either in agricultural economics or crop science. The numbers enrolled for soil science are few, as it appears difficult to find candidates with good enough grades in chemistry.

The pass rate for courses at the Faculty of Agriculture is at least 90 per cent. During the first four years (1984-87), a total of 219 graduated with first degrees. ⁷⁵ Given the slight expansion in enrolment, we can assume that close to 400 students have graduated from this Faculty during the 1980s with first degree qualifications.

Two M.Sc. courses are offered by the Faculty of Agriculture, in animal science and crop protection. The course in animal science started with a total of eight registered students. Crop protection will begin next semester for an anticipated group of 12 students. In addition to this, a course in biotechnology was also planned, and an M.Sc. course in food science is administered by the Faculty of Science.

Table 4.3 shows enrolment figures at the Faculty of Agriculture for 1980-88 (for undergraduate and post-graduate students). Of the 363 students registered in 1988, 307 attended undergraduate courses.

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⁷⁴. University of Zimbabwe: 1990 Calendar.

**Table 4.3 Students enrolled at the Faculty of Agriculture, University of Zimbabwe 1981 - 1988**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>112</td>
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<tr>
<td>1982</td>
<td>130</td>
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<tr>
<td>1983</td>
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<tr>
<td>1985</td>
<td>229</td>
</tr>
<tr>
<td>1986</td>
<td>289</td>
</tr>
<tr>
<td>1987</td>
<td>312</td>
</tr>
<tr>
<td>1988</td>
<td>363</td>
</tr>
</tbody>
</table>


The Faculty of Agriculture has a total of 50 teaching posts; only 37 are occupied (nine members of staff are expatriates).76 (More details related to research posts are given in Chapter 5.)

### 4.4.2 Other courses

The Department of Adult Education of the Faculty of Education offers courses for staff employed by different Ministries. A large part of the Ministry of Agriculture personnel receive further education in this way. One course available, for example, is a diploma in adult education with special focus on agriculture. In 1988, ten of the forty students enrolled in adult education completed this course with a bias in agriculture. Entry requirements to this particular course include a minimum of five years' relevant working experience:

"The programme is designed to meet the present day problems and the needs and interests of candidates working in the broad fields of adult education in Zimbabwe. It is designed to reflect an approach of adult education and emphasise the acquisition of measurable skills, knowledge and attitudes of demonstrable importance and relevance of professional adult educators." 77

Good diploma graduates may continue for a B.Ed. in adult education. Some five to six students from the Ministry of Agriculture are admitted annually to this course. The best B.Ed. student(s) with an agricultural background are selected each year to do an M.Ed. course.

Most students who study agriculture to the levels listed here will normally continue to work at the Ministry as the opportunities for promotion are good, although the salaries are

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76. Ibid., pp. 144-45.

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not particularly high. However, some students who have qualified with a B.Ed. or with a higher level qualification might also be absorbed in other areas of rural development, work for an NGO or go into private enterprise. Once recruited by the Ministry of Agriculture, however, employees do not tend to diversify later into other areas of the employment market, as happens in other Ministries, as in the Ministry of Health, for example.

4.4.3 The second university

The new university to be established in Bulawayo has not made provision for a faculty of agriculture; one is given to suppose that Agriculture is not in need of particular attention at this time. Activities in the area of agriculture may be carried out by the faculties of science and environmental science for which provision has been made.

4.4.4 University courses abroad

It is understood, from various interviews, that undergraduate requirements are catered for by courses provided locally. The Department of National Scholarships has estimated that a total of 700 Zimbabweans go abroad for study purposes each year (equal to roughly 10 per cent of the output from the National University). At the postgraduate level, many of the agricultural institutions claimed that they in fact arrange for students to study abroad on courses of varying duration.

AGRITECH sends students for degree and M.Sc. courses in the United Kingdom, of which some 9-10 students annually are sponsored by the British Council. Students who complete studies at this level are highly placed to compete for alternative forms of employment, and the Organisation is not always sure of the return it is likely to receive on its investment. Some members of the agricultural extension staff have studied in the USSR and Yugoslavia also; in such cases, difficulties in determining the level of qualification have arisen.

4.5 Conclusion

Modification of the agricultural sector was initiated at Independence. The communal farms, previously neglected, were to be merged into an integrated agricultural system -- an activity entrusted to the Ministry of Agriculture. At the time, however, the Ministry did not have enough experienced staff to cope with the demanding task: priorities were therefore chosen, and one of these was the field of agricultural education.

In 1990, a variety of institutions train agricultural personnel at different levels. Some more established institutions have been streamlined in order to operate well within the new system structure, while others have been established from scratch. From a quantitative point of view, the output is well above that which can be absorbed by extension and research services within the Ministry of Agriculture. Even in the formal school system, there is a surplus of agricultural teachers.

Financial constraint is the primary reason for the staggered increase of personnel recruited at the agricultural support service level: the in-service training necessary upon recruitment of graduates is very costly, and it is evident that a qualitative change in agricultural education (at secondary and institutional levels) will be necessary before in-service training costs may be safely reduced.
Success is dependent upon greater co-operation and planning co-ordination between educational/training institutes at the Ministry of Agriculture, and Ministries of Education. AGRITEX is keen to become involved in curriculum development at the level of primary and secondary education, but closer integration at the post-secondary level is required also. Such integration would not only be of mutual benefit to the institutions involved, but would have positive implications for general agricultural development. Any achievements in education/training will only be made if based on distinct objectives and a clear understanding of the skills required by the potential labour market.

Any discussion of length of agricultural education, as well as of syllabus content, must allow for the validity of these perspectives. Other immediate issues have to be addressed in order to ensure efficiency in education. A solution must be found to rectify the present situation of staff shortage and lack of equipment. Part of the solution may be the use of farm revenues for a revolving fund to cover recurrent expenditures; and keeping a close watch on the utilisation of donor funds will certainly be an essential task.
Chapter 5
Agricultural research

This chapter analyses the objectives for agricultural research in Zimbabwe, and presents an overview of the kind of research carried out by different organisations, and cooperation between them. A close study of the relationship between research and the two major crops, maize and cotton, will follow later in the analysis.

The degree to which results from research are filtered downwards through the farming community via the extension services is examined, as is the critical issue of the extent to which farmers are actually in a position to influence the direction of research.

5.1 Agricultural research objectives

One of the national objectives for economic development in Zimbabwe has been to raise the 'endogenous scientific and technology capability'; prevailing conditions in Zimbabwe have not been unfavourable in this regard, since 'Zimbabwe has a fairly developed scientific and research infrastructure, especially in the agricultural sector'.

The research impetus had, however, declined just after Independence, and the Report of the Commission of Inquiry into the agricultural industry noted that:

"... unless higher priority is given to the funding of agricultural research, the technological progress necessary to maintain a successful rural development programme will not be achieved".

Agricultural research is carried out by numerous public and private organisations, such as the Department of Research and Specialist Services (DRSS), AGRITEX, Seed Co-op of Zimbabwe and the University of Zimbabwe. One could reasonably expect that the University of Zimbabwe would be allocated the task of fundamental research, while the Ministry of Agriculture would be involved in applied research. This does not seem to be quite the case, however, and both institutions are involved in applied research.

The primary task in agricultural research at present is the development of new varieties, new knowledge and agricultural technology for implementation in the agricultural sector with the aim of raising the production potential, output and crop diversification of the industry, and reducing production costs. Much research in the area of high-yielding and


79. Ibid., p. 8.

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early-maturing crops, and irrigation technologies is necessary to assure the conservation of water and energy in Natural Regions III, IV and V, and to achieve higher yields, and develop drought tolerant stock feed and crops for these regions.

Research efforts should not be concentrated more particularly in one of the agricultural sectors (commercial and subsistence) to the detriment of the other; the task of maintaining a balance between both has become increasingly difficult since Independence, as before this time, research was involved mainly with the large-scale farming sector and 'easier' farming environments. The need for a shift in emphasis to occur so as to solve the problems involved in small-scale and communal farming has now become critical.

Many agree that research should not be isolated from other related activities. The education, research and extension continuum requires an approach which involves each of the actors (the farmer, extensionist, researcher and educationalist) to act according to their own capacities, and in co-operation, in the process of identifying and isolating problems so that solutions may be generated.81

The fabric of objectives and activities condition and are conditioned by the present organisational research framework in Zimbabwe. In this chapter, we will examine to what extent this research has generated new knowledge to be applied in commercial and communal agriculture, and we will look at how the relationship between the research community, the farmers and the extension services works, and if the research community is in fact sensitive to farmers needs as farmers see them.

5.2 Historical background

The history of agricultural research in Zimbabwe dates back to 1903 when the Department of Agriculture was created, and when the primary objective in agricultural research was to increase export production.

The first agricultural research station, Salisbury Experimental Station, was established in 1909. Most research activities were at this time involved with finding crops of a high-yield variety and suitable to local conditions; tests were also carried out relating to the use of fertilisers, and disease and pest control. As commercial farming ('white' farming was a term used frequently to refer to this kind of farming) increased in different agro-ecological zones, the need for decentralisation of research activities to comprise testing on soil of varied type, and affected by different climatic conditions, also became important.

During the early 1920s, some attention was devoted to peasant farming, and a number of demonstration plots were located in these areas. Between 1930 and 1940, three experimental farms were brought into operation for indigenous African farmers at Marirangwe, Samenani and Makoholi, where different local crops were tested for yield potential, drought resistance and seed improvement.

This focusing of objectives and practical input during the early activities of the Experiment Station ensured a firm foundation for future development, and following the

Second World War, that development was rapid. It was during this stage of formulation and expansion that the Department of Research and Specialist Services (DRSS) came into being. With the expansion of the ‘white’ commercial farming sector, there was greater demand for the generation of new technologies, and in answer to the growing demand, it was proposed that a Governing Body be established with the task of consolidating and co-ordinating national efforts in the field of agricultural research. Another organisation, the Agricultural Research Council (ARC), with the purpose of promoting research, was set up in 1970, and it was planned that this new body would give farmers a direct influence on the planning and management of agricultural research.

The ideals of the new independent State in 1980 gradually powered the focus of agricultural research strategies to communal farming. The commercial sector, in other words, could, in principle, no longer be allowed to attract the greater focus of attention in the area of agricultural research activities in preference to other areas in agriculture (even if it was the sector with the capacity to ensure return of investment in the short-term). In the Transitional Development Plan (1982), it was noted that ‘Zimbabwe [had] a solid base for agricultural research’; the link between research and economy would be substantiated through greater research on farming systems, and this research would ‘be integrated with extensive services involving peasant farmers in decision making’.

In time, some commercial farm ventures later shifted to communal lands, but transport difficulties have staggered the development of research activities in the communal farming regions.

5.3 Agricultural research organisations

5.3.1 Department of Research and Specialist Services (DRSS)

The central role in the present structure of agricultural research in Zimbabwe is played by the DRSS. Although the Department was established in 1948, many of its research units were active long before this date.

The DRSS is divided into three divisions (see Figure 3):


83. Ibid.

Figure 3. The organisational structure of the DRSS

Source: Department of Research and Specialist Services
Agricultural research

AGRICULTURE

BRANCH OF AGRICULTURAL EDUCATION

DEPARTMENT OF VETERINARY SERVICES

AGRICULTURAL RESEARCH COUNCIL

EXECUTIVE BRANCH

DIVISION OF LIVESTOCK AND PASTURES

LOWVELD RESEARCH STATIONS

CROP BREEDING INSTITUTE

AGRONOMY INSTITUTE

MATOPOS RESEARCH STATIONS

GRASSLANDS RESEARCH STATION

HENDERSON RESEARCH STATION

DAIRY SERVICES

MEAT GRADING SERVICES

FIELD AND PASTURE RESEARCH INSTITUTE

MAKOHLI EXPERIMENT STATION

61
(i) **Research Services Division:**

This division is concerned with pest protection, soil productivity, environmental monitoring of chemicals, registration of pesticides; it is also active in providing advisory services.

(ii) **Division of Crop Research:**

This division is concerned with breeding, and agronomics of all crop types, except tobacco, tea and sugarcane.

(iii) **Division of livestock and pastures.**

(See 5.3.1.2 below.)

5.3.1.1 **Staffing**

In 1983, the total number of professional researchers at the Department was 145. By 1989, a further 20 posts had been created. The Department recruits about 20 researchers annually, mainly recently-graduated University students.

Correlation of the fairly high rate of recruitment of researchers and the relatively limited expansion of the Department in recent years, clearly indicates that the DRSS has a high turn-over of professional personnel. Some staff members are sent overseas to study for Masters Degrees, and these are bound by contract to work at least two to three years at the Department upon completion of their extended studies, or expiration of study leave. Following their studies and experiences abroad, these people are highly qualified in relative terms, and may therefore be attracted by the higher salary and other benefits offered by the private sector. Therefore, having encouraged, and perhaps to some extent financed the further training of their personnel, the DRSS is not always in a position to reap the benefit, as those with most potential are attracted elsewhere.

Data on actual staff numbers at the Department have not been available since 1983, and records for that year show that some 200 technical officers were employed at this time. An average of 20 diploma holders from agricultural colleges are recruited as research technicians annually, and about 50 agricultural assistants are recruited on the same basis among the certificate holders from the agricultural institutes.

The Department assists the agricultural colleges and institutes in the area of curriculum development, but the graduates it recruits directly from these institutions undergo two further years of in-service training; it would appear that the level of knowledge and practical expertise acquired in agriculture at the colleges and institutes is not quite adequate.
On-the-job work experience shall continue to be a predominant form of training over the next five to ten years, which is the time-scale the Department has set for its programme to rebuild a cadre of experienced research personnel. In 1989, the DRSS had a total personnel of 2,000.

5.3.1.2 Research conducted

Most of the research and testing is conducted in a number of research stations located throughout the country. Some sub-stations have been developed in communal areas. Map 4 gives the location of these research stations.

The Research Services Division carries out research under its own mandate, and coordinates research and support services for other branches of the DRSS, and for the entire agricultural industry.

The Division comprises the following specialised bodies:

(i) Biometric Bureau
(ii) Chemistry and Soil Research Institute
(iii) Information Services
(iv) Institute of Agricultural Engineering
(v) National Herbarium and Botanic Garden
(vi) Plant Protection Research Institute
(vii) Seed services
(viii) Technical Development Unit.

The Chemistry and Soil Research Institute began advisory services as early as 1905, and continues to carry out soil surveys and study the effects of various cropping practices on soil fertility. The chemistry section is responsible for legislation and the control of fertilisers, etc.

At the Institute of Agricultural Engineering (now transferred to AGRITEX), various testings have been carried out, relating to soil conservation, mechanical engineering and tillage projects.

The Plant Protection Research Institute carries out research on pests and diseases in Harare and at research stations located elsewhere, and focuses its activities on the needs of the communal farming sector.

The Crop Research Division co-ordinates research carried out by all institutes and research stations where the primary activity is centred on field crop horticulture. It has played an important role in the improvement of production methods, and in diversification for 13 major crops; it is involved in a continual study of the significance of ecological variance in Zimbabwe.

Map 4. Department of Research and Specialist Services (DRSS) research stations.

Source: The Department of Research and Specialist Services.
A project is currently being carried out which is aimed at increasing productivity on communal lands so that production figures there may fall into line with those for commercial farms.

The Division organises its activities in coordination with the following centres:

(i) Agronomy Institute  
(ii) Cotton Research Institute  
(iii) Crop Breeding Institute  
(iv) Horticulture and Coffee Research Institute  
(v) Lowveld Research Stations.

The Agronomy Institute is involved in fieldcrop agronomical research. It coordinates research activities at its centre in Harare, and implements what are referred to as 'off-station' experiments in the field, including research into the drought tolerance of maize.

The Cotton Research Institute will be dealt with in greater detail later.

Research and activities related to livestock production come under the competence of the Division of Livestock and Pastures, which is divided into a number of sectors:

(i) Dairy services  
(ii) Grasslands Research Station  
(iii) Henderson Research Station  
(iv) Matopos Research Station  
(v) Makoholi Experiment Station  
(vi) Meat grading services.

At Henderson, Matopos and Makoholi Research Stations, trials are carried out on crop production.86

The Farming System Research Unit (FSRU) is an 'autonomous' division, with a mandate to collaborate with the DRSS and other institutes 'to identify, adapt and test on farmers' fields, appropriate technologies for improving productivity of the farming systems in the communal areas of Zimbabwe.' Within this scope, the FSRU co-operates with AGRITEX and farmers 'in identifying objectives and constraints of farmers, opportunities for research and the implementation and evaluation of the research programme, as well as dissemination of the results.'87

5.3.1.3 Research dissemination

Research results are published in annual reports, and handbooks are published by different sections. The Information Services Department is responsible for the publication


of various journals, and staff in the DRSS contribute regular articles to other scientific journals.

The DRSS dissemination process has come through a very difficult phase in the last number of years, however. The Zimbabwe Agricultural Journal has not been published since 1986, due to difficulties in link-up procedures with the Government Printers Organisation.

5.3.2 Agricultural research council (ARC)

This body was set up to provide the Ministry with information and advisory services on research choices and requirements. It provides specialist advice at the organisational framework stage of proposed research projects, and helps in securing funding once such projects have been considered viable.

The original mandate of the ARC was to offer a structure which would allow farmers, particularly commercial farmers (represented by the Rhodesia National Farmers' Union), to become involved in policy formation in agricultural research. In government circles, the Council was welcomed as an encouragement to farmers to contribute towards research expenditure.

In 1973, a special ARC sub-committee was set up to look into the needs of communal-style agriculture. This sub-committee was responsible for co-ordinating agricultural research in the peasant sector, where important concerns were related to the sociological and economic implications of food production and distribution. The ARC held the view that the impasse to agricultural development in the peasant sector lay in these factors of production and distribution, and not in technological poverty.

Unfortunately, we were unable to obtain concrete information on other specific activities carried out directly by the ARC.

5.3.3 Agricultural and rural development authority (ARDA)

The ARDA is the parastatal organisation involved in agricultural research on communal lands. It is intended that the results of research co-ordinated and carried out by this authority will positively affect agricultural potential in Zimbabwe.

5.3.4 University of Zimbabwe

The DRSS is now in close co-operation, in the area of teaching and research activities, with the faculties of agriculture and science (particularly the departments of biology and chemistry) of the University of Zimbabwe.

5.3.4.1 Faculty of agriculture

An absolute majority of the staff at the faculty are appointed at either lecturer or senior lecturer level, thereby involved directly and intensely in both teaching and research.
Two professors and two research fellows were appointed to the faculty in 1989; staff at the time included seven senior lecturers and 35 lecturers.

The faculty of agriculture has four main areas of research (the number of professional staff active in each area is indicated in brackets):

(i) Agricultural economics (10)
(ii) Animal science (14)
(iii) Crop science (13)
(iv) Soil science and agricultural engineering (9).

Most of the staff working in agricultural economics were educated overseas. Only one completed his most advanced course of study (D.Phil.) at the University of Zimbabwe; one other obtained a B.Sc. locally. A similar situation prevails at the Department of Soil Science and Agricultural Engineering. Most of those working in crop science, on the other hand, have completed their education in Zimbabwe, some up to the M.Phil. or D.Phil. level.

In 1988, 55 students were registered in postgraduate research, and 34 of these were studying part-time; none of them were involved in course work at this time. In 1990, some 40 students are registered for Ph.D. courses at the Faculty of Agriculture, and many of these postgraduates are also employed by research institutions. Research staff at the DRSS, for example, may register for M.Sc. and Ph.D. programmes at the University (these students have the added facility of being able to do their fieldwork at a DRSS research station). For the four-year period 1984-87, three M.Sc. and thirteen Ph.D. degrees were awarded by the Faculty of Agriculture; the Ph.D. degrees awarded accounted for more than one-third of the total number of Ph.D. degrees awarded at the University of Zimbabwe.

The projects in Crop Science are related to produce such as barley, wheat and sorghum. Little research is being done on maize since 'what has to be done on maize has already been done.'

Under the list of activities relating to Agricultural Economics is a programme on food security which is to be funded by USAID over a period of four years. This will be one of the first research programmes to be implemented which is fundamentally policy-related, and the primary aim of the project is to facilitate and open channels of communication between decision-making authorities in different SADCC countries. Much of the research work involved under the project title will focus on Zimbabwe, but certain research extensions will include all SADCC countries.

A more comprehensive survey of projects in course indicates that projects in fundamental research do not dominate; rather, the majority of projects currently in preparation at the Faculty of Agriculture fall into the category of applied research.


89. Interview.
5.3.4.2 Faculty of science

The agricultural research being conducted under the authority of the faculty of science may be categorised as fundamental research. Most of the projects are in the domain of biochemistry, and one project is in food science.

5.3.4.3 Other university research

Research conducted in faculties and departments other than those of agriculture per se have a bearing on agricultural issues. Two clear examples are work being carried out at the Department of Geography, particularly work in the area of soil conservation, and the research into farm systems and extension done by the Centre for Applied Social Sciences (CASS).

The Zimbabwean Institute for Development Studies (ZIDS), which carries out research relating to extension services, shall shortly become a Department of the University of Zimbabwe.

5.3.5 Other organisations

Private organisations

Private sector interest in agricultural research has primarily focused on the development of chemical and machinery inputs. These organisations began to grow during the isolation period after 1965, when it was no longer possible to import machinery freely.90

Chemical companies have devoted a lot of attention to research and extension in the promotion of their products, especially with commercial crop production in mind. A strong factor influencing the motives of these companies is the profit-making one.

Certain NGOs are involved in research and evaluation. The Zimbabwe Project, dealing with development of the cooperative industry, is one such example.

ICRISAT

This programme, centred in Zimbabwe, is a regional SADCC programme for the conduct of research on sorghum and millet crops. The Matopos Research Station (MRS) and SADCC coordinated closely during the design of this programme, and the MRS is still actively involved in the project.

The objective of the project is to strengthen national research capacities in an effort to improve sorghum and millet production. In this respect, three activities have been initiated (research, education/training and services). The first four years of the project are to be financed by USAID, CIDA and GTZ; the envisaged time-scale for the project is 25 years.

National Farmers' Association of Zimbabwe

An important highlight in the participation of communal farmers in agricultural research in Zimbabwe following Independence is the creation of the National Farmers’ Association of Zimbabwe (NFAZ). Among the specific objectives of the organisation, are:

"To work with the Extension and Research Services in developing agriculture in the communal and resettlement areas and plot holders in urban areas".  

NFAZ has, in particular, cooperated with the University of Zimbabwe. In 1988, undergraduate students from the faculty of agriculture carried out a study, funded by the Ford Foundation, of eleven communal land areas, and interviewed 251 farmers on issues related to cropping programmes, production costs (at farm level), utilisation of agricultural inputs and finance.

Following this overview of agricultural research organisations, it is appropriate that we focus on research conducted on two major crops, and its impact on production.

5.4 Maize research

In the past, research on the production of maize was carried out with the intention of raising the potential yields of different varieties of the plant. There is now a surplus of maize produced for commercial sale (see Chapter 2), and one might expect a change of priority in the field of crop research to the development of other varieties of drought resistant crops.

In 1940, a Seed Maize Association was formed to provide members with improved maize seeds. During the early period of the DRSS, the emphasis was on finding maize hybrids which were commercially attractive. High-yielding hybrid maize breeding programmes were conducted in response to the view held that maize, as a staple food, should be grown in all areas throughout the country; the impact of the hybrid maize breeding programmes is in evidence on many large-scale commercial farms. Between 1951-55, and until 1976-80, the yield levels in this farming sector increased by 235 per cent; the increase is generally considered to be attributable firstly to the use of nitrogenous fertilizers, and secondly to hybrids.

The demand for maize as a staple food in communal farming has created a strong pressure in the research community to find varieties which can grow even in drier areas. The scale of research station testing and breeding was maintained at a very high level during the maize breeding programmes, and an extensive off-station testing programme was carried out in all provinces, concentrating largely on the communal areas in Natural Regions III and IV. The testing programme clearly demonstrated that, with well-timed operations, it is possible to achieve reasonable yields with maize, even in extremely dry seasons.  

maize was successfully tested at research stations located in low potential regions, the seeds found suitable were thereafter distributed by the Seed Co-op.

Drought-tolerant varieties of maize are now grown on communal farms to an extent that was not previously evident, which has meant that the crop dominates both the food and cash production, and is grown in regions throughout the country without exception.

The Chavunduka Report related profitability in maize production to the impact of research inputs. The significant advances achieved in maize production technology, particularly improved yields from new varieties, are responsible for the success. The reduction in agricultural research effort in recent years, combined with considerable rises in the price of fertilizer and fuel (both major inputs to the crop) mean that the profitability of maize as a crop is becoming less certain, particularly for those in the communal sector where maize is grown in regions not well-suited to existing maize varieties.94

5.5 Cotton Research

Cotton research is conducted in a single specialised institute located in Kadoma. The Cotton Research Institute was founded in 1925, and since has functioned under the direct authority of the DRSS; the Institute is recognised internationally.

5.5.1 Staff

The Cotton Research Institute employs 165 people. Of the total, ten are professional officers with degrees, most have graduated with M.Sc.s, and some with a B.Sc.s. Those recruited with a B.Sc. degree are expected to register for an M.Sc. course within four years of recruitment. Further training is done either locally or overseas. (At the date of the interview, in 1990, two staff members had registered for a Ph.D. programme at the University of Zimbabwe.) The rest of the staff comprises eight research technicians recruited locally (qualified at diploma level) from the agricultural colleges and five agricultural assistants (qualified at certificate level) from the agricultural institutes. Other employees are either semi-skilled or unskilled (each section has a core of semi-skilled staff to do the continuous work of record-taking in the field).

5.5.2 Equipment

Although the CRI is a government body, it receives aid (in the form of equipment) from overseas donors, such as ODA, USAID and the World Bank. The Institute is well equipped, and the laboratories particularly are of international standard.

5.5.3 Types of research conducted

From the outset, the Cotton Research Institute was involved in the testing, selection and breeding of different varieties of cotton worldwide. The real breakthrough in this field of research came in 1964-65, with the development of effective pest and disease control

methods. Large-scale commercial farmers were the first to benefit from the results of research, and their yields have substantially increased since the early sixties. In time, cotton production also began to expand into the communal areas (see Chapter 2), especially Guruve and Gokwe.

Today, cotton research is conducted both in the large-scale commercial farming sector and on communal lands. While the Commercial Cotton Growers' Association is active in the commercial farming sector, running a series of mini-research stations jointly with the Cotton Research Institute, Government plays a major role in supporting an effective national cotton research programme for the peasant sector.

Work at the CRI is divided into four sectors, agronomy/physiology, plant breeding, entomology and pathology. Tests carried out at the Agronomy Division deal with moisture conservation and fertiliser application. Long-term testing programmes on various rotation patterns are also in process.

Research in breeding is mostly devoted to efforts at improving fibre characteristics. The Cotton Marketing Board provides information and advice on international demand and requirements. Tests have been developed for experiment on a particular type of long staple cotton.

"The move towards the development of breeding materials with improved fibre characteristics, initiated during the 1984/85 season, has been very successful, and more than 90 per cent of our current material now possesses significant advances over present cultivars in terms of fibre length, strength and fineness".95

It is also the task of the CMB to be alert to changes in international market demand, in order to ensure that Zimbabwean-produced cotton holds its present position on what has become a delicate world market. In the National Plan, 1986-90, a growing competition for cotton sales on the international market had already been felt, and the Plan foresaw then the need to produce cotton suitable for new spinning techniques.

"Consequently, the Cotton Marketing Board and the research institutes will have to be engaged in developments which should enable Zimbabwean farmers to produce the right type of cotton to meet the needs of the customers in the overseas spinning mills".96

At the Entomology Division, testing is carried out on insecticides under various conditions. In Pathology, testing is conducted on resistence to different bacterial blight. Research projects are carried out in a variety of the Institute's research stations. Where testing processes appear to generate promising results, the varieties are then tested under real farm conditions. In all, there are 249 such trial farms in operation all over the cotton growing areas. A disappointing feature in the final stages of these research projects, however, is the Institute's limited capacity to follow-up programmes beyond the trial farm stage, due to financial constraints and transport difficulties.

5.5.4 Dissemination of research results

Research results generated are disseminated in various ways:

(i) Specialised courses in technical studies are offered at the Cotton Training Centre, aimed at students from the University or AGRITEX extension personnel.

(ii) In principle, an annual report is published which contains detailed information on all projects in hand (the latest report published was for the year 1986-87). Articles are prepared for inclusion in scientific journals; articles dealing with practical issues, aimed at farmers, are published in 'The Farmer'.

(iii) Local chemical companies co-operate directly with the Institute in the testing of their products without charge.

(iv) The Institute co-operates with the University of Zimbabwe 'when necessary'. There is no cooperation on research projects, nor do students from the University use the facilities of the Institute.

In the past, mini field-days were organised by the Institute in order to keep farmers informed of developments, and these events were very popular, with busloads of 600-700 farmers arriving at a time. Unfortunately, these field days are no longer organised.

The CRI was involved in another type of dissemination. Information on favourable trends in cotton production were transmitted through an integrated network of research, training/extension and marketing activities. Farmers involved in cotton production generally followed the CRI recommendations very closely -- that the international status that Zimbabwean-produced cotton enjoyed was in this way safeguarded. However, the matter is hardly so simple. The dissemination network had, as it still has, its weak points, and one of the most critical of these is the insufficient number of extension service workers who are expected to serve a very large geographical area.

The bilateral network which links CRI research work to extension activities in cotton seems to work well, with the Institute co-operating closely with the Cotton Training Centre, and liaising with the CMB (which is responsible for the distribution to farmers of seed varieties developed at the Institute) and the Commercial Cotton Growers’ Association. The senior staff of these institutions have received much praise for their capacity to work as an integrated group.

5.6 Co-operation in the dissemination of research results

The agricultural research infrastructure in Zimbabwe appears to be well developed, if somewhat fragmented. Research meetings and workshops are frequently organised by the University and the DRSS; yet, a University representative said that he lacked detailed knowledge on certain research carried out by the Government. Similarly, officials from the Ministry of Agriculture claimed that they knew very little about the research being carried out at the University. There appears thus to be a gap in the communication network. Attempts have been made to solve the problem through the work of committees and
sub-committees appointed the responsibility to ensure the exchange of information on research findings:

"Extension work and research are usually organised by different services; there exists a general tendency towards separation of interests and even alienation between the two services."

Another problem is the apparently insufficient co-ordination with extension service workers at local levels. At provincial and district level, many officials claimed to be uninformed about ongoing relevant research:

"Extension workers complain that research workers isolate themselves in their laboratories and experimental stations, do not pay attention to economic factors or the real problems of the farmers, delay publishing their findings and are not prepared to commit themselves to a firm opinion."

The value of national committees to discuss research results is disputable. Advisory functions should also be instituted around research stations, with representation for research, extension, local governments and farmers. One of the objectives would be to help define actual priorities for research to be conducted:

"Whereas vast sums of money have been spent in research into areas of agriculture concerned with production, limited finance has been available for research into the human component of the agricultural system."

To date, farmers have been regarded as mere receivers of research results, when their role as actors in the process should be recognised; they should be much more involved in the research process, providing feedback on research results and research priorities.

5.7 The role of farmers in agricultural research

International debate during the last decade has frequently come to ground on the issue of the indigenous knowledge of farming communities. Richards (1985) gives a number of examples from West Africa of the lack of agricultural skills among local farmers, which, according to him 'has had profound consequences for the present food production crisis in the region'. The trends have not improved, and the consequences of these misunderstandings continue to permeate research and development directed at the small-holder sector.

It is held by many that the specific knowledge and skills of the scientist on the one hand, and the farmer on the other, could be merged together into more relevant methods of agricultural research:

"Scientists have what might be termed 'microscope' knowledge. Farmers are able to locate technical details in a social context. The two types of knowledge are complementary."


98. Ibid., p. 17.

99. Ibid., p. 4


101. Ibid., p. 149.
Chambers (1983) suggests that further co-operation take place: that the merge of these two talents should be supplemented with a further call for multidisciplinary integration.

"The sociologist and soil scientist, the agronomist and the economist, can sit down together and find a common activity and common understanding in learning from those other professionals - the rural people -- who do not distinguish disciplinary domains". 102

It appears that an acute awareness actually exists in Zimbabwe at the present time of the necessity to involve farmers to a much greater degree in the research process, and one might expect that this could further strengthen the bottom-up approach to agricultural research. The extension services are not only essential for transmitting new knowledge to their 'target' group, i.e. the farmers; they must also act as intermediaries between the farmer and the research community. One senior AGRITEX official expressed this twofold task as: 'find[ing] out what kind of research the individual farmer demands'. The same official expressed worry as to why research so often 'finds answers to problems which are considerably less than immediate in their importance to farmers'. 103  The extent to which extension can be a two-way communication between those active in agriculture, or remain simply a means of spreading the use of innovative techniques to farm labourers and farm managers, will be analysed in Chapter 6.

Given the wide diversity of agricultural potential in Zimbabwe, research which aims at improving farming systems must be locally specific. Research activities should therefore be more involved in on-the-ground conditions; more time could be spent in the field, and less in research stations; an important consequence of this type of change in emphasis would be the impetus created for closer co-operation between researchers, extension services and farmers.

Research results must be tested in a realistic environment and then applied to a wider context:

"... tested and evaluated under conditions similar to those encountered by the farmer, thereby making it possible to identify the technical, economic, social and institutional constraints which would prevent implementation by the farmers". 104

The NFAZ holds similar convictions, it would appear, from its call for 'Farming Systems Research':

"It is critical for researchers to work closely with communal farmers. Farmers have some information which is not readily available to researchers. Researchers must go to the people, and together they must identify problems in order to put an end to the haphazard investigation of related and unrelated phenomena, and then there must be an agreement on the methodology, and then there must be an agreement to be used in implementation". 105


Agricultural research

At the time of Independence, the direct links between extension and research were virtually broken. To rectify that state of affairs, a Committee for On-farm Research and Extension (COFRE) was formed, and became responsible for ensuring direct interaction between AGRITEX and the DRSS. Expectations are high that through the continued work of the Committee, research findings shall be translated into recommendations for action.

Inter-disciplinary teams of researchers and extension officers are active in promoting the testing of methods and crops to be conducted on the landholding of individual farmers:

"The R&E continuum demands a process approach which involves the farmer, extensionist and researcher in problem identification, isolation of causes of problem and consequently generation of solutions to the problem, and extension and feedback to research".\(^\text{106}\)

The Provincial On-Farm Research Committee (POFRE), is another organisation working to integrate farming system research and extension. It endeavours to identify research problems, and conduct multi-locational trials and demonstrations.

5.8 Conclusion

It is held that four major events have determined agricultural development in Zimbabwe. One of them is assumed to be:

"... the major advances made in agricultural research in the 1950s and 1960s which brought about great improvements in agricultural productivity".\(^\text{107}\)

Clearly, agricultural research capacity in Zimbabwe has developed well. New crop varieties have been developed, and farming techniques have been introduced which should continue to contribute to further development in agricultural output at lower unit cost. The imbalanced focus of agricultural development before Independence has changed in the last decade, to the benefit of communal farming.

The crux to success lies in an improved and stabilised network of exchange and integration among those involved in different research bodies, and activities in the field. It is clear that the two main organisations, i.e. the Department of Research and Specialist Services (DRSS) and the Faculty of Agriculture at the University, are in close regular communication. In fact, this close co-operation has led to projects of a fairly similar character being commenced; their activities are co-operative rather than complementary. Even more important, if research is not to operate in a vacuum, are the vertical links. These are the links which depend upon established channels of information, through the extension services to the farming community, in order to disseminate research results.

\(^{106}\) Hakutangzi, M.B.K. (1989): Use of on-farm research trial results in developing extension messages. AGRITEX, p. 27.


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"Agricultural extension is the channel of communication through which the findings of agricultural research are passed on to the farmers. The value of agricultural research is largely lost if research findings are not communicated to the farmers in a way that will enable them to improve their farming practices". 108

Many AGRITEX officials, working at both the provincial and district levels, have been critical of the efficiency of the established networks in this respect. The reasoning they use is not exclusive: if information and training on new technologies does not reach individual farmers, whether small- or large-scale, technological advances of the greatest distinction are of little value in real terms.

One distinguishes, finally, the socio-economic dimension of technological development and technical research. Research is relevant only when it becomes a social reality, or if it has the potential to become so in time; agricultural research must be made relevant to the agricultural reality of Zimbabwe. In any real situation, exchange is unavoidable and essential. In terms of progress in agricultural terms also, the two-way farmer/specialist exchange must be secured. This might be done with a view to the following:

(i) involving research stations more with the rural milieu in which they are located;
(ii) encouraging intimate contact between researcher and farmer in on-farm testing situations;
(iii) through the application of farming systems research, accounting not only for the diversity of region, but also for the variance in socio-economic status among households of the same locality.

The role of catalyst in this process will be played by the extension services.

Chapter 6
Extension services

Zimbabwe is recognised as the country with the best extension services in Tropical Africa. It is therefore of interest, in this study, that we try to distinguish the guiding principles behind agricultural extension in Zimbabwe. We will also measure the extent to which well planned strategies have in fact been implemented. The formal structure of organisations, staffing and extension methods will be studied, as well as those factors which govern the adoption or non-adoption of the advice offered by those services in the field. Finally, we will discuss the existence of a relationship between adoption rates and literacy.

6.1 Extension services policy

The main work of the extension services is the transmission of suitable techniques to farmers. This task is organised through the Department of Agricultural, Technical and Extension Services, AGRITEX, which has as its official objective:

"To implement the agricultural policy of government through the provision of agricultural, technical and extension services, which stimulate the adoption of proven agricultural practices, leading to increased, sustained and profitable production".

The exclusive relationship between extension services and farmers is expressed as follows:

"The problem is not one of bringing communal areas into a cash economy and to establish growth points, but is a problem of changing a largely subsistence-oriented mentality and its institutional components into an internally motivated growth promoting society".

This chapter endeavours to measure the impact of extension service activities on the modes of production in communal farming.

6.2 General background

AGRITEX was formed after Independence, when two Departments of the Ministry of Agriculture, the Department of Conservation and Extension (CONEX), and the Department of Agricultural Development (DEVAG) were amalgamated into one structure. The former had been concerned with the needs of the large-scale commercial sector, and had


110. Pamphlet from AGRITEX.

Education, training and agricultural development in Zimbabwe

close links with the research sector through crop and livestock extension specialists. DEVAG had at the same time been responsible for extension services to the peasant farming sector, and was administered under the authority of the Ministry of Lands.\textsuperscript{112} The objective of the amalgamation was to integrate into a common national structure the dual economy which then characterised the agricultural sector. Figure 4 outlines the organisational set-up of the Organisation, which comprises three main divisions (Engineering, Field and Technical).

The \textit{Engineering Division} deals with matters related to irrigation, soil and water conservation, and the development of farm machinery and equipment.

The \textit{Technical Division} is divided into five sub-divisions. Two of these provide training for specialists, in animal and crop production. One sub-division is charged with land use planning, and collecting data manually and by remote sensing.

Through its Management Services, AGRITEX has, to a limited degree, been involved in the direct evaluation and monitoring of projects; its findings have been made known at provincial and district levels. (Information on the follow-up to these activities in the field was not available.)

6.3 AGRITEX field services

6.3.1 Extension strategies

Most farmers are self-employed and work in order to ensure a subsistence-type existence. Government policy is that individual farming households should, on the whole, be self-sufficient, and wherever possible, produce a surplus. (Chapter 2 has outlined the various incentives formulated to encourage farmers to improve productivity.)

The field service personnel employed by AGRITEX provide farmers with non-formal training on the use of new production techniques, and the economic benefit and financial return which can be yielded through improved techniques. Extension services cover (see Figure 4) the national, provincial, district and ward/village levels; a variety of extension methods are applied in order to reach as many farmers as possible.

To small-scale farmers and, to a certain extent, those who have resettled, agricultural advice is given on a directly individual basis.

For communal farmers, consultancy services are provided on a group basis; the local extension worker organises the formation of various production groups, according to locality, or where a number of farmers cultivate the same crop. Leaders are selected for each group to be trained as innovators and future initiators of change in their local communities.

On-farm demonstration sessions are organised on chosen plots to illustrate perceived advantages of certain crop varieties and new techniques, and field days are organised where there is a need to speak to the greater population of the community or village.

Figure 4 Organisational chart of AGRITEX

Source: AGRITEX Pamplet.
This system clearly has certain shortcomings: new techniques may be acquired by farmers who have been in direct contact with extension workers; therefore, while there is an insufficient number of well-trained extension personnel in the field, only a minority grouping of farmers, rather than the whole rural community, may be involved in general agricultural development.

6.3.2 Staffing

The First Five-Year National Development Plan emphasised the importance of having sufficient numbers of experienced personnel active in the field in order that the extension service be efficient.

"The agricultural extension services are primarily oriented towards the small-scale farmer, but the main problem that Agritex now faces is the relatively large number of inexperienced staff at all levels. For this reason, considerable emphasis will be placed on in-service training. The extension worker-to-farmer ratio improved from 1:1000 in 1980, to 1:800 in 1985. The Plan target is 1:600".113

At present, the target is 1:300 or 1:400 (extension worker to farming household). Improving the extension worker/farming household ratio was also a priority concern in the Chavunduka Report:

"The Commission accordingly recommends that a higher priority be given to increasing the number of posts for extension workers and extension officers even at the expense of other desirable development".114

At the national level, there is a total of three senior staff members in the field division. In the provinces, the total number of professional employees is 2195. Table 6.1 gives the number of employees by position.

Table 6.1 Positions in the provinces (AGRITEX, Sept 1990)

<table>
<thead>
<tr>
<th>Position</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chief agricultural extension officers</td>
<td>8</td>
</tr>
<tr>
<td>Principal agricultural officers</td>
<td>16</td>
</tr>
<tr>
<td>District agricultural extension officers</td>
<td>49</td>
</tr>
<tr>
<td>AGRITEX extension officers</td>
<td>196</td>
</tr>
<tr>
<td>Senior extension supervisors</td>
<td>51</td>
</tr>
<tr>
<td>Extension supervisors</td>
<td>236</td>
</tr>
<tr>
<td>Extension workers</td>
<td>1662</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2218</td>
</tr>
</tbody>
</table>

Source: AGRITEX


Personnel at the provincial level are generally holders of a university degree. Extension officers at the district level are professionals who act as advisors and trainers for extension workers in local areas — they are not involved in managing field staff — and are generally qualified diploma graduates from one of the agricultural colleges. Among their main activities at local level is the organisation of seminars and workshops where technological issues are discussed.

A problem frequently referred to in discussions was the difference in background between extension workers/supervisors and their seniors, i.e. extension officers, at district level. While many extension workers may have a lot of practical experience in the field, the majority of extension officers are relatively young, and although qualified formally, generally lack experience in the field. At senior level, extension officers have the opportunity to continue further education in the agricultural field; their qualifications are recognised nationally, and are attractive to employers in the private sector and to NGOs. The turn-over at senior level is therefore higher than at extension worker/supervisor level.

Increasing the number of extension workers in the field has been an important objective in recent times: much remains to be done before this goal will have been achieved. If one calculates the number of households on communal lands to be approximately 900,000, the apparent ratio extension worker to farmer is 1:540. Small-scale commercial farmers, however, are consulted on an individual basis, and in resettlement areas the ratio is also lower. Some extension workers are assigned special tasks, such as cartography or irrigation. Taking these factors into account, the actual extension worker to farmer ratio on communal lands is somewhere between 1:700 to 1:800, with large variation according to region. The ratio actually ranges from 1:600 to 1:1,300, whilst the objective was to reach a ratio of 1:400.115

During discussions with extension workers and their supervisors, it became evident that they were in charge of at least 800-1,000 farming households, excepting extension workers on small-scale commercial lands or resettlement areas; newly-employed extension workers do not work alone, but train with an experienced colleague. It is obvious then that there is a serious shortage of staff in the extension services at local level. To achieve a ratio of 1:300 (one extension worker per ward), the number of extension workers would have to be at least doubled.

After Independence, there were plans to expand the extension services to an adequate level on a gradual basis. World Bank loans would help, as would the higher student intake at agricultural institutes to ensure the availability of additional qualified personnel, and courses at the institutes would be cut from three to two years (see Chapter 4). A total 2,500 students have since graduated with certificates of agriculture from these institutes. Had a majority of these been employed as extension workers, the ratio on communal lands may have been lowered to some 1:400 or 1:500. But expansion has been hindered — not due to a lack of adequately qualified people — but because of the Organisation’s financial constraints: the costs of housing, transportation and in-service training, in addition to salary, has seriously restricted the planned expansion.

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Transportation has proved an insurmountable obstacle to date. Even the loans secured for the purchase of 1,200 motor-cycles have not reversed the situation: extension workers tend to purchase these motor-cycles upon termination of service. Mileage allowance paid is not adequate, and in the case of breakdown, it is particularly difficult to have the bicycles repaired. During an interview, only six extension workers in ten said they had a motor-bike. In Matabeleland South, only 85 extension workers of a total of 147 were said to have motor-bikes. Some extension workers in this region explained that they often had to walk up to 20 kilometers to reach some villages. The efficiency of such a system is evidently highly suspect.

Despite these harsh working conditions, aggravated by a staff shortage, few extension workers resign from their posts. Many indicated that they were dissatisfied due to the low salary scale, the lack of opportunities for promotion, lack of transport and the fact that the areas they were expected to cover in their consultancy work was too large. But they are highly aware of the value of their activities, and are determined to succeed, although the difficulties they endure have not improved for some time. Many of these workers have no desire to migrate from rural areas to the cities, and the numbers applying to agricultural institutes each year, even given that alternatives are limited, represent a high interest in extension field services as a career among much of the younger population.

It appears essential that salaries and other conditions of service for professional and technical agricultural staff be reviewed, since the number of experienced staff members who resign to work for other organisations or private companies, attracted by higher salaries and better conditions, both in Zimbabwe and in other countries in Africa, has now reached a critical level.

6.3.3 Extension methods

There are four main extension methods in use in Zimbabwe:

(i) Master farmer scheme
(ii) Training and visit system
(iii) Farmer extension promotion scheme
(iv) Group extension

The Master farmer scheme is the most commonly used method; it is used both exclusively, and in conjunction with other schemes. A comprehensive description of this method is given below.

6.3.3.1 The master farmer scheme

The Master farmer scheme came into operation in the 1920s when a missionary worker by the name of Alvord set up a programme of good crop production as part of a specific training programme. The results of training showed that farmers working on what were then called reserves, had considerable increases in yields. The first master farmer certificate was awarded in 1935, and other incentives, such as master farmer badges, were introduced later to try to sustain interest among farmers to increase crop yields.
During the 1950s, a programme was introduced to allow peasants to purchase land (this land is now categorised as small-scale commercial farmland), and the master farmer certificate was a prerequisite. Those who possessed the badge were likely to be successful in the procuration of loans, and although at the present time no formal conditions govern the allocation of credit facilities, holding a master farmer badge is still a decided advantage.

A master farmer course is of two years' duration. Trainees are not required to be literate in order to enter training which is both theoretical and practical, and in fact any member of the farming community may be admitted. (Theoretical sessions are open for all farmers who wish to attend.) Under the theory section, an average of about 30 training sessions of approximately four hours each are held annually, and the trainee must attend at least 24 of these sessions to qualify for the final examination which may be either written or oral. The practical element in the course entails the cultivation of at least two crops, and one of these crops must be a grain crop. To qualify as a successful master farmer, the trainee must, in two consecutive years, reach a certain target set by the District Agricultural Extension Officer.

Up to Independence, some 40,000 master farmers graduated with a certificate. During the five years following the first government policy on Master Farmer training (1982), more than 50,000 Master Farmers were trained.

Master farmers totally 8,495 graduated for 1988/89 and 1989/90. Of these, approximately 30 per cent were women. Up to 50 trainees may attend the course (including first and second years), plus an advanced master farmers' course, all courses organised and led by one extension worker.

The actual skills of qualified master farmers were brought into question by the Mashonaland Central AGRITEX Officer, who claimed that their actual yields following training were often not of the increase expected.

"Most of the master farmers like to walk around with their master farmer badges pinned on their jackets but when we visit them at their homes, they do not want us to know that they are master farmers because production at their places does not show that they were trained". 116

He said that there might be many reasons for the failure to produce as forecast, one being the farmers' individual abilities, although this was not so evident in an interview with a master farmer who said that: "A master farmer know what to do. Normally come out a little bit better than the rest".

In relative terms, the programme reaches relatively few farmers on communal lands directly, the fundamental premise being that selected farmers, or master farmers, function as agents of change in the rural community:

"... to assist directly or indirectly with agricultural extension e.g. by passing on technical information acquired during the period of training to fellow members of a group or neighbour farmers and simply by example of good crop and animal husbandry practices". 117

116. The Sunday Mail, 16 September 1990.

In reality, it appears that master farmers are not typical peasants, being 'generally more progressive and prosperous than farmers in the rest of the community' and the actual 'trickle-down' effect is therefore limited.

A programme for advanced master farmers was also introduced, and was originally intended for sons and daughters of commercial farmers. Those who complete the master farmer test and a literacy test successfully may be admitted to this programme.

During the programme, the farmer must prove his skills in a subject called *Advanced Farm Management*, which includes the completion of a farm budget. The final examination is written, and set in English. During the last two seasons, a total of 818 advanced master farmers graduated, of which just over 20 per cent were female.

For planned resettlement programmes in the future, it has been suggested that acquisition of land should be linked to farmer training. If this plan is introduced, priority will almost certainly be given to advanced master farmers.

### 6.3.3.2 The training and visiting system

This system was first conducted in 1982 in the Midlands province, financed by a World Bank loan, and has since been carried out in some other provinces.

In the system, groups appoint farm leaders to be trained by extension workers. On completion of their training, the appointed leader returns to the group and shares his new knowledge with it. Extension personnel organise to visit the group afterwards to monitor the success of the follow-up.

Initially, this programme was seen as an efficient way to mobilise farmers to transmit various technical advice among the farming community. However, according to studies carried out by AGRITEX Management Services, the end result was not very favourable. The reasons for this seemed to be more related to internal administrative factors, rather than the pros and cons of the system itself. Viability of the programme, and its continuation, are therefore still in the balance.

### 6.3.3.3 The farmer extension promotion scheme

The *farmer extension promotion scheme* offers a more thorough and intensive training. Promotion agents trained through this scheme are paid by the Government for services rendered; otherwise, the principles involved are similar to those for the training and visiting system.

Both these programmes come within the guidelines issued in the Chavunduka Report to alleviate the acute manpower shortage:

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118. Ibid., p. 2,

119. Memo, AGRITEX
"AGRITEX has proposed that initially, each extension worker should have two village workers to assist him. The Commission supports this proposal in principle. However, in order to be most effective, we consider that village workers should not be regarded as government employees, but rather as nominees of local groups. They should be public spirited leaders selected by the local people to act as a link between themselves and the formal extension network. They should not receive any remuneration from the government, but since they may well suffer financially as a result of their duties they should be paid an allowance to cover out-of-pocket expenses. This should be paid by the group which appointed them, with assistance from the government where necessary, possibly on a dollar for dollar basis".

6.3.3.4 Group approaches

Most of the extension services in Zimbabwe are directed through groups, and mobilising farmers into these various groups is the main task of extension workers. The group approach enables them to expand coverage, which is critical in view of the present extension worker to farmer ratio.

Groups can be formed in a specific village, or based according to a number of farmers cultivating a certain commodity. Savings clubs, where group savings are organised in order to cover the costs of certain commodities purchased co-operatively, are another form of group approach presently effecting agricultural efficiency at local-level. Women tend to be involved in these clubs more so than men, and many positive evaluations of experiences of women's groups have been made. The following comment represents the general feeling among extension workers of the value of women's groups:

"One of the extension workers said that he found it more rewarding to work with women's groups, such as saving clubs, because they displayed a higher level of commitment towards the goal of increasing agricultural production".

Role plays and drama are often used to illustrate certain agricultural concepts or experiences. These activities emerged during the liberation struggle, but the messages relayed are related to present conditions. Field days, agricultural shows and special visits to study various extension programmes are examples of other activities organised in rural areas. All extension workers are expected to organise at least one field day annually where farmers may share experiences, and where information may be relayed to a large community. Field days also provide an opportunity for senior staff to acquaint themselves with farmers at the local level.

Radio is a means of extension with greater impact, and groups come together to listen to programmes and discuss. AGRITEX publishes an educational journal called KUNZA/UKUZWA which has a circulation of 40,000 copies, and is distributed mainly to groups, free of charge.


Finally, groups are formed for specific projects and in order to ensure an economic approach; such groups may be involved in marketing and supply, in co-operative industries, or may be organised for particular building projects (e.g., constructing a dam, bridge, school etc.). (See Chapter 3 for other types of self-help.)

Working with groups may be both beneficial and constructive, so that contact between extensions workers and farmers may be extended and formalised, channels for the organisation of follow-up activities and further contact may become more concrete, and information and co-operation networks among the farming community may be strengthened. Unfortunately, the danger that those selected as leaders may use their influence for their own individual advancement, are unavoidable. Some extension workers claimed they had problems with greedy farmers who kept any new knowledge to themselves instead of helping to spread it among others.

6.3.4 Problems connected to a wider adoption of advice

It has been argued that the strength of extension workers is their technical knowledge rather than their socio-economic understanding of the local environment. A former employee with AGRITEX noted that agricultural extension has a key role to play in the development of small-scale and large-scale farming. Many farmers of small holdings in Zimbabwe have adopted modern farming technology, yet 'a significant proportion of these small farmers have actually not adopted the important agricultural innovations which the agricultural extension services have for several decades been trying to promote'.

The cautious note on which he concludes is not surprising:

"What one can conclude from this is that unless serious efforts are made to ensure that the technology is appropriate for adoption by a larger number of people, it is likely that the technology will almost invariably reach the more innovative sub-audience with the bulk of the other members of the target groups remaining little or not affected at all. The 'trickle-down' effect of technological benefits to disadvantaged members of society is not a common phenomenon, as evidence from field investigations has shown".

Such has been the impact of the group extension methods, and although these methods have not 'been a deliberate act of policy', they have been perhaps the easiest way to deal with the population factor. It is evident that, even if group methods appear a cost-efficient way to disseminate agricultural knowledge, '[they do] not serve the interest of the less privileged and poorer members of the target groups', or in other words, the primary target population.

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123. Ibid., p. 25.

124. Ibid., p. 25.

125. Ibid., p. 25.
Thus, policy choices have to be made, and consequences have to be drawn for extension services. The reasons why many farmers do not adopt new technologies is not exclusively due to conservatism or irrationality; other very important and inhibiting factors are those of labour and cash:

"Zimbabwe is committed to a development policy of growth with equity, but faces a conflict between allocating scarce resources (extension agents, credit, market infrastructure, etc.) to the better-off communal farmer who produces the bulk of the agricultural surplus essential to the development of the economy; or to spreading these resources over a broader spectrum of farmers and reducing the marketed surplus".126

In conclusion, it is evident that the extension services, combined with an adequate pricing policy, have been influential in increasing productivity in Zimbabwe, and raising the communal lands' share of agricultural cash crop production. Easier access to inputs, credit, remittances, infrastructural development, plus a general mood of optimism following Independence, and a fairly well educated rural population have contributed to an economic outlook which is brighter than elsewhere in Africa.

Of paramount interest now must be how to get the whole farming community involved in this general improvement. For this, extension services, and research projects must become vigorously concerned with those who have not adopted innovations. Raising the extension worker to farmer ratios is one element only; changing the attitudes of extension workers who operate in complex conditions and environments, both socially and economically, is of paramount importance. Consultancy services based around an active group structure may lead to a new dualism among farmers: In the long-term, it would be detrimental if the whole farming community cannot become involved in the general agricultural development of Zimbabwe.

6.3.5 Co-operation between AGRITEX and other extension agents

6.3.5.1 NGOs

AGRITEX co-operates with numerous organisations, such as the parastatal, ARDA, or any of the various NGOs, based internally or externally, through its extension service activities. Members of the extension personnel at different levels referred frequently to their contact with NGOs such as Christian CARE, Africa 2000, Lutheran World Federation, World Vision, Redd Barna etc. Often, the NGO performance was seen as a positive contribution to other work being done. There was reservation, however, that projects in which the NGOs were involved, or which had been generated through them, were not self-generating, and where an NGO withdrew, activities initiated were also terminated.

The Zimbabwe Project is one such local NGO. Many of the projects in which the Organisation participates are co-operative. One line of activity is the promotion of literacy:

"The Zimbabwe Project has played a significant role in imparting literacy skills among co-operatives with more than half the co-operatives with classes reporting to have been assisted by the organisation".127

6.3.5.2 Donor Organisations

Among donor organisations financing extension services is the German International Donor Organization, GTZ. It has sponsored a pilot project CARD (Co-ordinated Agricultural and Rural Development), centred in Masvingo. Local NGOs and Government agencies are also involved in this programme.128

6.3.5.3 Farmers' Organisations

One of the most constructive results related to extension services in rural areas are farmers' organisations. Three such associations now exist in Zimbabwe.

The Commercial Farmers' Union and the Zimbabwe National Farmers' Union are intended for large- and small-scale commercial farmers, respectively.

The third organisation, functioning as a national entity since 1980, the National Farmers' Association of Zimbabwe (NFAZ), gathers communal farmers throughout the country. Before this organisation was set up, only one organisation existed to which communal farmers could allocate themselves, the Victoria Association of Master Farmer Clubs in Masvingo (formerly Victoria). NFAZ has stated its official objective as follows:

"NFAZ's objective is to improve the standard of living of the farming community in communal and resettlement areas. Its primary concern is to increase the production and income of farmers. Sufficient land, good farming techniques, marketing facilities, input distribution, credit facilities, functioning infrastructure and a satisfactory price policy are the cornerstones in this respect".129

NFAZ is closely involved in the mobilisation of farmers into groups. Since 1980, some 5,000 groups have been formed under its supervision, and have access to AGRITEX extension services. NFAZ also participates in organising field days and agricultural shows. In 1988, the total membership of the Organisation was 80,000, i.e. less than 10 per cent of the potential target group, yet this increase in itself represents a tremendous increase from some 20,000 at the mid 1980s.

Those affiliated to NFAZ have in general a high regard for the quality of AGRITEX extension services. Through group activities associated with the organisation, farmers themselves become demonstrators with the result that information can be relayed in a completely local environment, and the information received with more adaptability. NFAZ and AGRITEX have come to operate very closely, so that the former is ‘almost like a part of AGRITEX’. One positive result of this relationship is that farmers have greater access to the services of AGRITEX.


129. NFAZ (date unknown): NFAZ Model, p. 2.
The club is a forum where the members meet to discuss problems and issues concerning agricultural activities and the standard of living in rural areas. The members can give their views on what they feel needs to be done, and follow-up action is taken by the Organisation.

The National Association also devotes a considerable share of its operational budget to education and training. In 1988/89, a total of 180 courses/seminars took place, with 7,749 participants attending. Table 6.2 details some of the subjects covered. Most were intended for community leaders at the village level, and held locally. The two days' basic leadership course is arranged twice annually in each district, and specific courses for female leadership are organised. The Organisation also sends farm leaders and members of staff for training abroad.

Table 6.2 Courses/seminars offered by NFAZ in 1988/89

<table>
<thead>
<tr>
<th>Course</th>
<th>Number of courses</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>National seminar</td>
<td>1</td>
<td>77</td>
<td>11</td>
<td>88</td>
</tr>
<tr>
<td>Provincial seminar</td>
<td>8</td>
<td>169</td>
<td>48</td>
<td>217</td>
</tr>
<tr>
<td>Commodity courses</td>
<td>27</td>
<td>451</td>
<td>88</td>
<td>539</td>
</tr>
<tr>
<td>District leadership</td>
<td>17</td>
<td>229</td>
<td>84</td>
<td>313</td>
</tr>
<tr>
<td>Area leadership</td>
<td>109</td>
<td>4178</td>
<td>1992</td>
<td>6170</td>
</tr>
<tr>
<td>Female leadership</td>
<td>17</td>
<td>-</td>
<td>378</td>
<td>378</td>
</tr>
<tr>
<td>Youth courses</td>
<td>1</td>
<td>22</td>
<td>5</td>
<td>27</td>
</tr>
<tr>
<td>Study group co-ordinators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>181</td>
<td>5130</td>
<td>2609</td>
<td>7739</td>
</tr>
</tbody>
</table>

Source: NFAZ, 1990

6.4 Feedback mechanism through extension and research

Cousins recognises 'the provision of better extension services' as one of the reasons for increased production in the peasant sector, although he has also observed that much of the advice offered is not relevant to many communal farmers.

Research and extension needs to be further integrated, and extension strategies must be formulated to adapt to diverse natural conditions. The formulation of strategies implies some kind of farming system research (see Chapter 5). According to Cousins, such research would include the following elements:


131. Ibid.
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(i) Extension workers would collect data in their respective areas of assignment, compiling available statistics and creating a diagnosis of existing problems.

(ii) Recommendations would not only be in answer to the conditions of the specific area, but to individual farmholdings, since basic family characteristics vary substantially at the village level. (In many of these households, for example, the heads - women in most cases - are illiterate.)

(iii) On-farm trials, conducted in cooperation with researchers and extension personnel, are a key element in farming system research. Involving farmers in such schemes would be beneficial and easily organised.

(iv) The adaptation of new recommendations should be a constant learning process for both the farmer and extension worker where various innovations can be tried out under changing circumstances.

This approach to extension activities and research has had no actual impact on the extension services so far, as it cannot easily be accommodated in the different group approaches described earlier.

The success of this approach lies in the quality of the relationship between extension workers and farmers, which is not consistently the two-way process planned in ideal cases where extension workers learn from farmers as well as advising them. The sensitivity on the part of the farmer in face of the unexpressed - yet for that reason, all the more felt - superiority of the extension worker, may also curb the effectiveness of the contact. It seems likely that the balance may be easily disturbed where extension workers are tempted by the ease of consulting successful farmers rather than those who need consultancy services most. For a representative pattern to emerge, it would be essential that feedback from those who choose not to adopt advice given them be included in all field reports.

The question of plot selection for on-farm testing could be studied, since it may be supposed that, through the rule of least resistance, plots chosen are those of more affluent and successful farmers. Testing on plots of ordinary farmers would provide more obstacles to success, and possibly lead research in another direction.

Many social scientists have suggested that greater integration between extension and research, based on indigenous farming skills, is important if extension work is to be successful generally. This would mean an increase in the importance of institutional and in-service training, in order to ensure a wider socio-economic understanding among extension personnel and technical researchers. The latter category need to be able to absorb as well as impart, to become better learners as well as teachers. Johnson (1988), speaks of the need to improve learning ability:

"To achieve this, a change is needed in pre-service and in-service training (at whatever level), to direct it away from pedagogy and towards self-learning".132

A holistic perspective is necessary to not only change the emphasis from large-scale commercial farming towards the communal peasants, but also to the most disadvantaged sections within the latter segment.

6.5 Extension and maize production

It has been observed above that research on maize production has been carried out since the early twentieth century. Different varieties of maize hybrids are a natural component of any advice package provided by AGRITEX. Even in areas not suitable for crop production at all, the demand for drought resistant maize varieties is forcing extension workers to elaborate different options. Among the agricultural innovations provided by the extension services, different hybrid maize varieties have been the most successful ones. As an example, the CARD project, mentioned above, has had close to 100 per cent adoption among communal farmers in respect of the use of maize hybrids. Many farmers deem the variety to be a rather low cost innovation, compared to, for example, inorganic fertiliser application, which has been applied by few farmers.

"What is clear from empirical research is that the improvements that have been readily adopted by the smallholder farmers have a relatively low cost per area cultivated compared with those that have only been marginally adopted or not at all".133

6.6 Extension and cotton production

For the adoption of cotton, the pattern is more complicated. Many extension workers attend courses at the Cotton Training Centre, and specific training is arranged for cotton farmers also.

During the decade following Independence, a total of 6,385 communal farmers took part in three-week production courses organised at the Cotton Training Centre. Five courses of this type are offered annually. Details of the courses are given in Table 6.3.

Table 6.3 Communal farmers attending the Cotton Training Centre course 1980-1989

<table>
<thead>
<tr>
<th>Year</th>
<th>N’ of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>31</td>
</tr>
<tr>
<td>1981</td>
<td>334</td>
</tr>
<tr>
<td>1982</td>
<td>386</td>
</tr>
<tr>
<td>1983</td>
<td>489</td>
</tr>
<tr>
<td>1984</td>
<td>827</td>
</tr>
<tr>
<td>1985</td>
<td>936</td>
</tr>
<tr>
<td>1986</td>
<td>1,198</td>
</tr>
<tr>
<td>1987</td>
<td>900</td>
</tr>
<tr>
<td>1988</td>
<td>615</td>
</tr>
<tr>
<td>1989</td>
<td>669</td>
</tr>
<tr>
<td>Total</td>
<td>6,385</td>
</tr>
</tbody>
</table>

Source: Cotton Training Centre

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The reason for a decline in the numbers participating in these courses at the end of the eighties may have been influenced by the fact that one of the foreign donors, FAO, withdrew its assistance around this time.

Initially, the Cotton Training Centre was started by the Commercial Cotton Growers' Association, and was seen at the time as a way to lobby for a better deal for cotton growers in general. Not surprisingly, several busloads of government officials are brought down to the Centre each year to see how 'white' farmers are helping the 'black' masses in the rural areas.

All communal farmers participating in these courses have been sponsored; 158 farmers paid for their training individually. The majority, almost 70 per cent, were funded by official donor agencies, i.e. FAO, EEC, USAID. Local companies, such as Shell and Total, sponsored courses for another 20 per cent. These companies frequently co-operate directly with AGRITECH.

"... chemical companies represented in the area are active in rendering extension services to the local farmers particularly with regard to the application of inputs they supply."134

Some extension workers expressed a feeling, during the interviews, that some chemical companies acted outside given domains. One example given was of a company which tried to promote a whole package programme. However, what was offered was much more expensive than the individual components would have been, if purchased separately. As chemical companies have strong vested interests in promoting cotton production, a closer control of their activities would be desirable. The extent to which their involvement is guided by pure profit interests or the welfare of the farmers is debatable.

A number of plotholders within ARDA have received cotton training at the centre. Communal farmers totalling 35 were funded by NGOs to attend the course (Redd Barna, Freedom from Hunger and Manicaland Development Association). Successful candidates in these courses are awarded a certificate. The failure rate is fairly low (some 5 per cent in 1988/89). For the season 1990/91, the only group to record a high failure rate was the Manicaland Development Association, and this due to 'a high proportion of illiterate participants'.

Communal farmers who attend these courses are selected by AGRITECH. One important criteria is that they have leadership ability, in order to maximise the multiplier effect to those farmers who have not been trained. Another criteria is that farmers should be literate.

In an evaluation of the training offered, a sample of 109 farmers at one cotton training programme, were surveyed. Only three of this total were illiterate, and it was noted that all three farmers eventually failed the test.

At the Cotton Training Centre, it was claimed that there was no compromise on the literacy requirement for the trainees, and that there was a direct correlation between training results and level of education. It was suggested that cotton growing could be an ideal activity for secondary school drop-outs, but such a plan has little viability if sufficient land is not available.

6.7 Adoption of new technologies and literacy

One may reasonably assume that there is a general correlation between level of schooling and the more general affluence in the Zimbabwean society. Yet it is difficult to isolate the effects of one factor, such as literacy, on the rate of adoption of new technologies advocated by the extension services.

A comparison between the two crops, maize and cotton, selected for a comprehensive study do give some indications. Educational background seems to be of rather marginal importance when one attempts to envisage whether or not a farmer is likely to adopt new varieties or farming techniques related to maize production. Many extension workers claimed that illiterate women were often leaders and innovators, and that their strong motivation, keenness and interest could compensate for their lack in reading ability.

However, the picture is hardly so clear. While many argue that basic education for adults is not a central factor in the adoption of technical innovations, adult literacy programmes are frequently regarded as important contributions to innovation among female farmers. It is true that, in many cases, where women are unable to read instructions themselves, school children are able to help. Basic schooling can be a platform to attain a master farmer status, or to become a community leader in some group activity.

Most extension personnel interviewed insisted that a basic knowledge in reading, writing and numeracy was essential for the success of cotton growers. It is interesting that where maize cultivation is concerned, literacy was not regarded as essential. It is also held that cotton production is one of the best means of improving cash income and material living standards in communal land areas, some years of formal schooling or adult literacy may very well be a minimum requirement for those who want to use this method to increase farm profitability, and to diversify their agricultural production.

A more general conclusion is that literacy is an advantage where the adoption and successful cultivation of more complicated crops is concerned. In respect of hybrid maize adoption, literacy skills are not indispensable; but if a farmer wishes to produce cash crops, the usage procedures are described in writing in detail, and literacy and primary schooling is therefore necessary; income can be generated where the eventual surplus is sold. Farmers intending to go into cotton production do need some years of education; the final profit in changing from maize to cotton cultivation is not necessarily high, since there is an important credit input involved in the change of production.

"Persons with more than six years of education appear to have a higher income, but also higher production costs, and not necessarily a greater gross margin". 135

Many extension workers interviewed claimed that illiteracy was not necessarily a large stumbling block in the pursuance of more modern farming, although in their dealings with illiterate farmers, they needed to be more flexible in the ways they advised, and needed to adopt different teaching methods. If we assume that in practice, the easiest solution to situations demanding both adaptability and patience is often adopted by the extension workers, it seems evident that, in time, illiteracy shall certainly become a handicap to earning a successful livelihood for farmers.

The views expressed here are primarily related to subjective impressions communicated by personnel in the agricultural sector, and supported by indications from a variety of documentary sources. For a more conclusive picture, further research will be necessary. In order for the analysis to be comprehensive, the project would need to include the social welfare dimension, and thereby go far beyond the narrow boundaries of a mere insensitive cost-benefit calculation.

6.8 Conclusion

Zimbabwe has been credited with having one of the most efficient extension services in Africa, organised through AGRITEX. The success of the extension service network has undoubtedly been a contributing factor to favourable agricultural development.

However, the system of extension services is far from perfectly balanced to cope with agricultural needs, and the ratio of extension worker to farmer needs to be improved considerably. The restrictive policy towards expansion of field staff numbers is motivated by financial constraints and not by a shortage of qualified candidates for new posts. Due to the relative shortage of personnel, and limitation of transport facilities, the network of consultancy and information services is still of limited impact. Hakutangwi has stressed that the network needs to be more integrated.

Most extension methods are centred on a group approach, where the theory is that a selected number of farmers are trained in a comprehensive way, and these farmers, through their acquired knowledge and leadership ability, will transmit new skills to other members of the community; this 'trickle-down' process has proved neither automatic nor evident. Neither can the rejection or non-acceptance of new technologies be explained by laziness, irrationality or lack of training. In most cases, it is related to a crude calculation of risks and an intuitive 'cost/benefit analysis' on the part of the individual farmer.

One might expect that extension workers would decide to follow up the activities of non-adopters and make an effort to comprehend their reasoning. Extension workers, however, are primarily trained in technical matters, and are not trained for competency in field survey activities which demand a deeper socio-economic understanding of the local context.

Literate and educated farmers are more prone to diversify agricultural production towards more complicated cash crops. Where successful, this can result in a higher income from the produce sold. However, the credit acquired to purchase necessary inputs for improved production can generate something of a debt problem, the end result being greater involvement in a monetary economy, with only increased nominal material welfare.
In order for the real value of indigenous knowledge to be recognised in efforts to develop appropriate technologies, a true partnership must operate between the education, extension and research sectors.
Chapter 7
Concluding analysis

7.1 Agricultural achievements

Among Sub-Saharan African countries, the agricultural achievements of Zimbabwe are unique. A substantial surplus was generated by the large-scale commercial farm sector for decades, while the rural African population was squeezed into overcrowded, relatively infertile areas. Following Independence in 1980, there was a shift in policy emphasis to encourage greater involvement of African peasant (communal) farmers in a 'modern' agricultural structure, though without any mandatory pressure on the white farming community to quit their landholdings. At the end of the decade, communal farmers had overtaken large-scale commercial operations in total sales to the marketing boards for both maize and cotton. However, the yields per hectare are still, on average, substantially lower than on the highly mechanised commercial farms. Overall, the country is a net exporter of cash crops such as tobacco, cotton and maize. Such a level of production is remarkable, particularly so, given that the country suffered several years of severe drought.

It would appear that agricultural production in Zimbabwe has not yet reached full potential, and there is much regional disparity in terms of agricultural production. A contributing factor to the comparatively low average yields on communal lands is their location -- normally in dryland regions, with limited access to irrigation schemes.

7.2 Agricultural policies

A main conclusion drawn in this report is that agricultural development in Zimbabwe since Independence has been largely instituted through a deliberate integrated Government policy, involving marketing, pricing, credit, inputs, irrigation, co-operatives, research and extension. The original structures were laid down during the colonial period, some parts of them in the early years of this century, when the emphasis was, primarily, in favour of large-scale commercial agriculture. During the 1980s, a major effort was made to mould the established structure into a single national agricultural concern, combatting the existing dualism. Communal farmers may now benefit from the agricultural support services which have resulted.

7.3. Institutional framework

This report has attempted to correlate agricultural development in Zimbabwe to the influence exercised by two components of government policy, research and extension. Achievements within these two fields are closely related to the general and more specialised educational performance.
There is a long tradition of agricultural research in Zimbabwe, and a network of research institutions was established long before Independence. Today, central roles are played by the Faculty of Agriculture at the University, and the DRSS at the Ministry of Agriculture.

Both commercial and communal farmers should be able to benefit directly from new technological innovations. Research on maize, for example, currently focuses on the testing of high yielding varieties, and also drought resistance crops for communal farmers in the dryland areas. Similarly, results of experiments on pest and disease control in cotton research, are disseminated to large-scale commercial farms and to communal farmers. The DRSS has established numerous research stations for testing under specific environmental conditions, and experiments are also conducted in 'typical' farming milieux.

To make an impact on agricultural development, research results must be filtered down to the ultimate user, i.e., the farmer. This task is entrusted to AGRITEX. Most of the extension strategies utilised are based on the group approach, such as the master farmer training, the training and visiting system or the farmer extension promotion scheme. The strategy envisaged that agricultural messages be transmitted from the extension worker to some selected community leaders who act as agents of change. It is assumed that those who have been in direct contact with extension workers will increase their productivity through the use of more rational and modern farming methods, and that their example will emulate other villagers who will in turn listen to the advice given by the farming leaders. This method is dependent upon a functional and efficient 'trickle-down' effect.

One important reason why AGRITEX uses the group approach is that the Organisation suffers from a serious shortage of staff and field personnel at the local level. The inadequate ratio of extension worker to farmer, and transportation difficulties, mean that shortcuts are taken in extension work process.

An adequate cadre of skilled manpower is essential for further agricultural development to be achieved. This cannot be provided without the existence and quality operation of established institutions which will provide direct vocational agricultural education/training, and an efficient formal school system. Two agricultural colleges and four institutes presently provide training in basic technological skills to potential extension staff. Agronomists and agricultural researchers are educated at the Faculty of Agriculture, University of Zimbabwe where courses are offered to doctorate level. University education in agriculture has expanded rapidly since Independence, and there is no shortage of secondary school leavers to compete for places in agricultural colleges/institutes or the University of Zimbabwe.

During the last decade, education became a general right for all children in Zimbabwe. The primary education sector has expanded impressively, and secondary education is no longer the privilege of the select. However, it appears that the rate of expansion has negatively affected the quality of education. For students enrolled in agricultural training at any level, the most acute shortcoming is insufficient knowledge in science subjects. Attempts have been made to correct this situation, but without apparent impact.
Even if there is a sufficient supply of trained agricultural specialists, two problems must be addressed. One is that AGRITEEX should be able to recruit more people so as to reinforce the extension services. The other is that the Ministry of Agriculture has a low competitive potential for the highly educated senior staff.

7.4 A brief note on operational efficiency

An efficient extension service is dependent upon an integrated network for the dissemination of research results. Many agricultural extension staff, both senior and in the field, criticised the limited extent to which new technologies are filtered down through the system. Where the vertical channel of information is not effective, research can only function in a kind of vacuum. In principle, numerous committees operate to co-ordinate activities on different levels; but an urgent and worthwhile task must be to make this network function more efficiently.

Even more complicated is the issue of the feedback system from farmers. There have been many calls for better integration between the farming community and extension and research personnel; and many advocates of farming systems research have contributed to the debate. If research is to be of relevance, it is absolutely necessary that such calls be heeded. One concrete instrument could be that more attention is devoted to on-farm testing with the active participation of all the relevant parties. More efficient channels for information exchange should be worked out, horizontally and vertically: it is essential that vertical communication becomes a two-way exchange; and that horizontal integration is not only related to organisations on a national level, but should occur in the local context.

It is clear that not all farmers are adopting the new technologies after they have been informed of them. The onus is on extension workers to try to discover the rationale behind non-adoption of new techniques. The results of such an inquiry should serve not only to ensure increased aggregate yields, but also to spread the benefits of the agricultural development more evenly.

7.5 Impact of literacy and education

Measuring literacy and formal schooling as factors influencing the adoption of new technologies, is particularly complex. Extension workers frequently insisted that they had little difficulty in conveying their messages to illiterate farmers, and that motivation among these farmers to improve their living conditions generally compensated for lack of literacy skills.

Where the group approach is used, it may be assumed that among the farming leaders chosen as innovators, one criteria for selection is literacy. The further transmission of agricultural messages through already established channels is normally not a very complicated task; however, the assumed diffusion of new knowledge to a wider farming community is more difficult and poses a serious problem, as the extension services not only contribute to increased productivity, but may also sharpen disparities between households at the local level. This effect is unintentional, and needs to be redressed with intense vigour.
While staying involved in a basically subsistence-style activity, without a formal school background, farmers may absorb and adapt to certain technological changes which bring about increased commercial production. In this case, illiterate farmers work on what was referred to earlier in this chapter as an intuitive calculation of risk, cost and benefits. The fact, however, remains, that the running of a modern commercial farm, with diverse cash crop production requires basic education, at least.

Literate farmers are more likely to diversify the cropping pattern to include more products for sales and to increase an income. The adoption and implementation of a total extension package also requires basic education. Further, an ability to work out a farm budget is an asset for those who wish to acquire credit for necessary inputs, or to understand pricing and marketing procedures.

The ability to read and write, together with some basic skills in arithmetic, is necessary for the initial cultivation of different kinds of more complicated cash crops, such as cotton. All the views cited agree that the successful cultivation of cotton requires literacy among farmers. On the other hand, hybrid maize varieties, especially drought resistant ones, appear to be cultivated quite successfully by those without the ability to read or write.

7.6 Final remarks

There seems to be a definite correlation between agricultural development on the one hand, and research, extension and education on the other, in Zimbabwe. The comparative weight of these factors, in relation to other areas of a Government strategy, is difficult to determine. It is rather an integrated policy to transform the agricultural structure, while maintaining a surplus production that bears fruit.

The general strategy adopted deviates in no substantial way from strategies implemented in other African countries. The advantage in the Zimbabwean case, we might safely surmise, is that a basic infrastructure for research and extension services already existed before Independence, and that the new Government succeeded in adjusting the existing organisations to new demands.

Agricultural research in Zimbabwe is of a high standard, particularly so in the African context, despite its weakness in seeing farmers as the target group rather than as a group with which researchers might collaborate.

Agricultural extension in this country is clearly one of the best in Africa. Challenges remain, and one important issue now is to ensure its effectiveness among the entire farming community.

In education, much has been achieved which will contribute to development in the long-term. It is essential now to evaluate the need for quantitative expansion against qualitative considerations; a planned moderate growth is desirable in the long run, both in terms of economic reality and social equality.
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This paper explores the impact of education and training on agricultural development in Zimbabwe, paying special attention to small-scale and peasant farming.

Zimbabwe's agricultural achievements during the last decade have been described as something of a success story; not only has the productivity remained on a high level since independence, but communal (peasant) farmers have been increasingly involved in the commercial sector, even if regional variations exist.

Agricultural research may well provide methods to increase productivity, but the research results must be filtered down to the ultimate user in order to have an impact on development research; this is the role of the extension services and of education. This report analyzes achievements in research and in extension services and the way these are related to the performance of general and specialized education.

Although research organizations in Zimbabwe play a crucial role in the economy, the author argues that some improvement would be possible by establishing more horizontal links with other research institutions and vertical links with producers. Extension services are also of a high calibre, even if they do not yet reach the entire farming community.

Due to the tremendous quantitative expansion of the educational system in the last decade, qualitative aspects have perhaps been neglected. This constitutes a problem for the training dispensed at agricultural colleges and institutions and it may also constitute difficulties for the training of farmers. If extension services contribute to productivity in traditional farming, it is found that basic education and literacy among farmers is essential for the adoption of more complicated commercial crops, such as cotton.

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