The Marketing of Off-farm Inputs in the Communal Areas of Zimbabwe

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Introduction

Future increases in national agricultural output will rely heavily on increased yields or productivity in the peasant sector. This is so because the potential yields are yet to be realized. Production can be greatly increased by increased purchases of off-farm inputs such as high quality seed, fertilizers and other recurrent inputs. The use of these off-farm inputs in the peasant sector is still quite limited, yields are very low and specialisation is uncommon. Research has shown that the use of hybrid seed and fertilizer can result in a 200% increase in yields where such inputs have never been used before.

The reliance on the peasant sector for future increases in the agricultural output also rests on the fact that this is a more cost effective alternative. The marginal returns per unit input are very high in this sector due to the stage of production which prevails in the rural areas. Studies in Kenya by the World Bank have also revealed that the peasants are very responsive to opportunities for profitable innovations, and they can be more productive than larger farmers (World Bank).

There is also the need to raise peasant incomes. About 60% of this country's population is engaged in peasant farming activities. Most of them survive on a very low annual per capita income based largely on low productive crop and livestock production. The annual population growth rate (about 3.4%) is greater than the growth rate of agricultural production. This results in increased land pressure and low productivity, hunger, poverty, poor nutrition, ill health and little or no access to formal education.

Increasing agricultural output and thus incomes will mean increased demand for industrial goods. This will stimulate the growth of the industrial sector which is limited by the small market for manufactured goods. An increase in the industrial sector will mean more employment, thus partially solving the employment problem in this country. Lastly, besides the provision of food to the urban sector, agriculture also provides an investible surplus for national development.

A major cause of poor performance in the peasant sector is the lack of inputs or the lack of knowledge of their use. Agricultural inputs should be available on a regular basis at the right time. Their prices should be such that the returns from their use is worthwhile to the peasant farmer. The availability of these inputs on a regular basis and at the correct time is of great importance. The use of hybrid seed means the loss of the traditional seed. If a farmer is unable to obtain the seed every year the use of last year's maize will result in a disaster. Also many inputs, such as seed and fertilizer, are complimentary. To receive maximum benefits from hybrid seed, fertilizer and other inputs have got to be used, and all of them have to be applied at certain critical times. Therefore, if peasant agricultural output is to be increased, the marketing system and distribution of inputs must be efficient.

Marketing is a combination of activities which includes assembly, transport, grading, storage of both the products and inputs, financing the holding of the product between the time that the producer is paid and when it is bought by the consumer, adapting the product to consumer tastes, informing the consumers of its availability and quality, presenting it in a convenient sized lots and all the other operations involved in bringing goods from the producer to the final consumer.
Availability of Off-Farm Inputs to the Communal Farmer

The off-farm inputs referred to include seed, chemicals, operational machinery, transport, fuel, long-term investments in buildings, irrigation etc., as well as management skills and technology.

The Large Scale Commercial farmer in Zimbabwe has a direct link with the producers and distributors of off-farm inputs. Stemming from this direct link and the volume of inputs purchased, the input producers are able to introduce new products and techniques to the farmers, giving on-farm demonstrations and field days. Therefore the farmer knows exactly what he is buying and how to use it so as to derive maximum benefit from inputs. The firms are also in a position to offer credit to farmers.

In the Communal Areas the farmer acquires his inputs through local traders. Traders have little knowledge of the functions of inputs and cannot explain how the input is to be used and cannot advise the farmer on quantities, complimentary practices etc. Rural traders are widespread and situated far away from the majority of the farmers. They have very limited resources available and cannot transport the inputs to the farmer or advance credit. Because of this resource limit they are frequently inadequately stocked. Transportation of inputs is often on passenger buses which demand very high freight charges, and because the buses are not adapted to transportation of these goods, damages and losses occur and the farmer suffers.

Inputs from co-operative societies are restricted to members only. These co-operative societies also suffer from a shortage of financial and other resources, making it difficult to maintain input stocks. Although there has been a rapid increase in co-operative societies there are very few compared to the number of Communal farmers.

Acquisition of off-farm inputs is difficult in the Communal Areas. Farm supplies in Zimbabwe are available mainly in big towns or in co-operative stores where they are accessible to members only, rather than deep in the rural areas where they would help the peasant farmer. In these areas the farmers depend on small traders who are very few and far between, and many farmers have to travel long distances to purchase their supplies.

The Whitsun Foundation Rural Service Development Study estimated that there are some 2,500 small business centres in the rural areas and most of them are situated at some distance from the relatively developed urban centres. The "average" distance between these centres in the more remote areas is about 60 km. The cost of travelling coupled with the loss of time from the farm incurred by making a journey to these centres might cancel out whatever economic benefits were to be realized from using off-farm inputs. Furthermore, these small business centres are frequently inadequately stocked. It is a rare phenomenon to find related farm supplies in one store. In these areas the buying and transportation of the supplies is carried out by the individual trader himself.

In addition there are Group Development Areas or co-operatives. At present there are 400 co-operative societies, 18 co-operative credit unions and about 26 co-operative unions, all of which are under the register of the Department of Co-operative Development, Ministry of Lands. However, many of these co-operative unions are located around already developed urban areas. The G.D.A.'s have a pyramidal co-operative structure. At the grass root level individuals are affiliated to a co-operative society; ten individuals can form a co-operative society. The various societies then affiliate to a co-operative union which in turn is controlled by the Ministry of Lands.
Factors Affecting the Availability of Inputs

Price of Fertilizer

A recent survey of the situation in Gokwe Communal Land shows the effects of the increasing price of fertilizer on fertilizer application rates and yield. With the increasing fertilizer price between 1965 and 1972 the trend appears to be a decrease in amount of fertilizer purchased per ha. The increase in total output is more attributable to the increase in area cultivated than to any increase in yield/ha, which fluctuates greatly. The trend has been a drop in the application of fertilizer over time, with increasing fertilizer cost to the Communal farmer. Although the value of agricultural output has risen over time, it is likely that had the price of fertilizers not risen so much, more fertilizer would have been used, and the value of total output would have increased even more as a result of yield/ha increases (Devag).

The demand for fertilizer also tends to be heavily influenced by the availability of working capital. Falusi and Williams (in Eicher and Baker) identified the following factors as constraints on fertilizer use in Nigeria:

(1) low returns to investment in land on bush fallow farming systems;
(2) absence of fertilizer-responsive varieties;
(3) moisture stress in drier areas; and (4) inadequate extension support.

### TABLE 1. Trends in Fertilizer Price and Cost to the Commercial Farmer

<table>
<thead>
<tr>
<th>Year</th>
<th>Fertilizer</th>
<th>Cost $/t</th>
<th>Transport Cost $/t</th>
<th>Cost to Farmer $/t</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>AN</td>
<td>57.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>COMPD.D</td>
<td>49.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1971</td>
<td>AN</td>
<td>63.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>COMPD.D</td>
<td>55.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1972</td>
<td>AN</td>
<td>63.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>COMPD.D</td>
<td>55.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1973</td>
<td>AN</td>
<td>63.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>COMPD.D</td>
<td>55.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1974</td>
<td>AN</td>
<td>74.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>COMPD.D</td>
<td>66.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1975</td>
<td>AN</td>
<td>127.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>COMPD.D</td>
<td>91.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1976</td>
<td>AN</td>
<td>116.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>COMPD.D</td>
<td>99.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1977</td>
<td>AN</td>
<td>129.40</td>
<td>6.30</td>
<td>135.70</td>
</tr>
<tr>
<td></td>
<td>COMPD.D</td>
<td>106.00</td>
<td>6.30</td>
<td>112.30</td>
</tr>
<tr>
<td>1978</td>
<td>AN</td>
<td>138.80</td>
<td>6.37</td>
<td>145.17</td>
</tr>
<tr>
<td></td>
<td>COMPD.D</td>
<td>114.20</td>
<td>6.37</td>
<td>120.57</td>
</tr>
<tr>
<td>1979</td>
<td>AN</td>
<td>141.60</td>
<td>7.96</td>
<td>149.56</td>
</tr>
<tr>
<td></td>
<td>COMPD.D</td>
<td>128.20</td>
<td>7.96</td>
<td>136.16</td>
</tr>
<tr>
<td>1980</td>
<td>AN</td>
<td>168.20</td>
<td>8.76</td>
<td>176.96</td>
</tr>
<tr>
<td></td>
<td>COMPD.D</td>
<td>154.00</td>
<td>8.76</td>
<td>162.76</td>
</tr>
<tr>
<td>1981</td>
<td>AN</td>
<td>187.20</td>
<td>11.20</td>
<td>198.40</td>
</tr>
<tr>
<td></td>
<td>COMPD.D</td>
<td>168.00</td>
<td>11.20</td>
<td>179.20</td>
</tr>
<tr>
<td>1982</td>
<td>AN</td>
<td>206.80</td>
<td>11.31</td>
<td>218.11</td>
</tr>
<tr>
<td></td>
<td>COMPD.D</td>
<td>189.40</td>
<td>11.31</td>
<td>200.71</td>
</tr>
</tbody>
</table>

* The transport cost is based on the C.F.U. approximation of 40 km road transport and 150 km rail, as well as a handling charge.

Transport

The basic transport cost trend can be seen in Table 1. The Communal farmer normally has to pay much higher transport costs due to the longer distances, poorer roads and scarcity of transport operators in the Communal Areas. Thus the cost of inputs to the Communal farmer are even higher than to the Commercial farmer, therefore there is a tendency to hold back on use of these inputs and output is suppressed.

Price of Seed

The only way "to produce good crops is by planting good varieties and treated seed" (Gapare). The escalating price of seed, coupled with the difficulty in obtaining it, results in some Communal farmers planting their own untested, untreated seed and others being forced to spend a large proportion of their working capital on seed.

**TABLE 2**

<table>
<thead>
<tr>
<th>Year</th>
<th>Price/50 kg bag</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>$15,00</td>
</tr>
<tr>
<td>1977</td>
<td>$22,00</td>
</tr>
<tr>
<td>1978</td>
<td>$23,50</td>
</tr>
<tr>
<td>1979</td>
<td>$39,00</td>
</tr>
<tr>
<td>1980</td>
<td>$39,00</td>
</tr>
<tr>
<td>1981</td>
<td>$39,50</td>
</tr>
<tr>
<td>1982</td>
<td>$44,00</td>
</tr>
</tbody>
</table>

*Source: Commercial Seed Growers Association*

The fertilizer and seed constraints are different for commercial farmers, small scale commercial farmers and peasant farmers. The degree of use of these inputs therefore also differs, with resulting variations in yield. The potential for intensifying production in the communally-owned farming areas does exist given appropriate conditions. It may not be possible to match commercial sector yields, particularly in the Natural Regions III and IV. But with maize yields five times greater in the commercial sector, sorghum and groundnuts six times and soyabean and cotton three times greater (see Muir 6/81) it must be possible to increase yields in the peasant sector by lifting some of the constraints facing these farmers.

The most important development which has contributed to increased maize yields has been the use of hybrid seed together with application of adequate levels of nitrogenous fertilizer, as well as the maintenance of other major nutrients and the prevention of trace element deficiencies. The increase in the yields of sorghum in commercial areas has resulted from introduction of high yield hybrids (Tattersfield).

If suitable hybrids or fertilizers are not available to the peasant farmer, then he will not benefit from yield increases. Although fertilizers and seed are the only purchased inputs mentioned here, they are the most important in Zimbabwe and other purchased inputs face similar constraints. The detrimental effect of not using advanced technology varies with the
inputs considered e.g. milking cows by hand instead of by machine is not as harmful to productivity or profitability as not using fertilizer on crops.

**Infrastructure and Terrain**

The difficulty of getting the input to the farmer depends on distance, mode of transport, ruggedness of terrain, etc. (Whitlow). With the increasing difficulty of getting to the farmer there is an associated increased cost. If the peasant farmer cannot meet the cost of somebody else's transport then he may have to fetch the input himself ..., and he incurs an opportunity cost in terms of time in which he may have been better employed working on his own farm. Delays are often incurred and the profitability of his farming business is decreased.

Whitlow includes proximity to tar/gravel roads, railways, etc. in his determination of the infrastructure parameter; which is combined with the terrain parameter to produce a relative measure of development prospects. On this basis he has come up with a map of development potential in Zimbabwe (see Whitlow, ZAJ No. 79, 1982).

Also included in infrastructural factors affecting agricultural development are the trade barriers which exist. For example, the fertilizer companies do not accept a farmer's order for a new consignment of fertilizer until the last one has been paid for. Any delays in the peasant farmer getting payment for last year's crop and sending a cheque to pay for next year's fertilizer could result in his receiving fertilizer too late to be of benefit to the next crop.

There are barriers in the form of

(a) difficulty of physical payment due to limited banking facilities

(b) difficulty of synchronizing cash inflows (from last year's crop) with cash outflows (to pay for capital inputs required for the next season)

(c) lack of credit facilities.

The result of the various constraints can be seen in the numbers of capital items owned by peasant farmers:

**TABLE 3**

*Agricultural Equipment of Peasant Cultivators 1973 (N = 575)*

<table>
<thead>
<tr>
<th>Agricultural Equipment</th>
<th>Master Farmers</th>
<th></th>
<th>Other Peasant Farmers</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>At least one plough</td>
<td>19</td>
<td>100,0</td>
<td>300</td>
<td>54,0</td>
</tr>
<tr>
<td>At least one item of transportation</td>
<td>15</td>
<td>78,9</td>
<td>78</td>
<td>14,0</td>
</tr>
<tr>
<td>At least one item of cultivation</td>
<td>16</td>
<td>73,7</td>
<td>62</td>
<td>11,2</td>
</tr>
<tr>
<td>At least one larger productive capital investment</td>
<td>4</td>
<td>21,1</td>
<td>1</td>
<td>0,2</td>
</tr>
</tbody>
</table>

Source: Weinrich, 1974
Information

Information on current markets is very weak due to poor communication and illiteracy. This limits the bargaining power of the farmers and leads to the traders seeking wider margins so as to hedge against price changes in distant markets which they may not know about. Lack of information on price of inputs and where to buy them serves as a disincentive to the peasant farmers. Time is wasted travelling long distances looking for inputs. In many cases farmers do not know what is available on the market so that they continue to use inefficient inputs. Information should be collected and interpreted in terms which the local people and traders can understand. In addition to expanding the extension service this could be done by establishing local marketing authorities' use of radios and newsletters. The recently established co-ops could also perform this duty for their members.

Communicative labelling of farm supplies is needed. Labels on fertilizer bags are at present incomprehensible to most peasant farmers. If possible there should be a label stating the purpose of the contents and how they can be used. Some of the inputs purchased by farmers are of no economic benefit to them. The government or the manufacturers should be encouraged to demonstrate these products as they are in the commercial sector. This would mean increased use of the product and more efficient use of these inputs.

Credit

Credit is a major factor limiting the marketing and distribution of farm inputs. Most farmers see the advantage of using an input, but are limited by the resources available. One way in which input use could be encouraged is by making credit more accessible to small farmers. Logistically this is difficult to undertake on a wide scale but the A.F.C. scheme seems mainly to serve co-operative society members.

Before initiating orders and financing the purchase of inputs the rural traders must be motivated to engage in the farm supplies business. They need resources to pay for transport which increases the cost of supplies. Traders are often the only people to serve farmers in the most remote areas. Given credit and encouraged to engage in the farm supply business, the distribution of inputs would be wider and more efficient.

There is a need to present inputs in a form that the farmers can use. The 20 kg fertilizer bags available in this country are rarely seen in the rural areas so the farmer often has to buy a 50 kg bag. Thus his badly needed resources will be tied up in an input which is not immediately required and prone to damage. Production of 10 kg and 20 kg bags for distribution in the rural areas is needed. This also applies to seed maize. Most farmers have fields of less than 3 acres for cultivation, so the packs available do not suit their needs.

Substitutes

When prices of purchased inputs are too high, or if they are not available, the peasant farmer may often try to use substitutes, which, although sometimes effective, are not true complete substitutes for the capital inputs which are used by the commercial farmers.

For example fertilizers are substituted by kraal manure. "Although some farmers do make an effort in order to produce more kraal manure, they have an additional problem of carting the manure to their fields. Very few farmers have carts", which then have to be hired. Again high prices and low availabilities are encountered (Gapare). The replacement of manure for fertilizers is not enough. The maintenance of soil productivity necessitates fertilizer being supplemented by manure rather than being
This was made evident by Trials at Grasslands Research Station, on maize (Grant). The main problem with manure use is the very large amount which is required. To avoid nitrogen deficiency approximately 37t/ha of manure is required. Few farmers have enough animals to supply that, let alone the ability to cart it out to the fields (Grant).

Tractors may be substituted by draught power, and in this instance, the lower efficiency is compensated by the very low operating costs and by the introduction of cattle as a farm enterprise. The high price and poor availability of adequate fencing materials, good bulls, etc., however, decreases the profitability of the livestock enterprise.

Advantages of Using Off-farm Inputs

The advantages of using capital inputs in agriculture are numerous, provided they are used correctly.

Increased yield/ha is the greatest advantage. This arises mainly from increased fertilization and labour productivity with the introduction of mechanisation. The very much higher yields obtained in the Large Scale Sector are primarily the result of the intensive use of capital inputs.

Increased efficiency of operations... the more rapid operating capability resulting from mechanisation helps reduce labour bottlenecks at peak periods. Produce from the farm is more rapidly harvested, staved and transported, reducing the time that it would otherwise lie around. Spoilage is reduced at the same time, both from the crop standing too long in the field or the harvest waiting to be transported away from the farm. Farm produce is moved more rapidly to market when modern transport methods are used. By reaching the market sooner, the farmer receives payment for his crop sooner ... and can be in a liquid financial position early on in the next season (i.e. can afford inputs such as fertilizers, biocides, etc.)

Increased fertility or at least maintenance of soil fertility. Soils do not degenerate and erosion is prevented from becoming serious (e.g. communal lands face an annual soil loss average of 80t/ha in Zimbabwe).

Reduction of pests and diseases - they are prevented from reaching epidemic levels in the farming area.

Opportunity Cost of not using capital inputs. The main cost is the reduced yield per hectare, in addition approximately 15-25% of total crop production in Africa is lost on the field, and another 15-20% is lost in storage due to pest damage. Pesticides involve high cost, health hazards and education is required for their use ... with the result that they are not widely used by African peasant farmers. Besides spoilage, the peasant farmer faces a time cost in the delay involved in getting his crop onto the market, and receiving payment. Labour bottlenecks accentuate the timing problem, and also the spoilage problem (USDA).

The use of capital inputs serves to increase farm productivity and therefore returns on money invested. Agricultural development is fostered.

Disadvantages of Using Off-farm Inputs

Possible increased labour bottlenecks: e.g. the use of herbicides reduces the labour requirement for weeding. If the area of land under cultivation is then increased, the labour bottleneck at harvest time could well be increased.

Uma Lele quotes the problem of tractor use by African peasant farmers. Tractor services are needed at only the few critical peak periods of labour
demand. Tractors are most useful in field preparation, but not in weeding and harvesting. At the same time there is a tendency to plough and sow more land than there is enough labour to cope with it. The labour bottleneck at weedicings and harvestings is accentuated.

High Cost and Misuse of Capital Inputs: mechanisation is costly, and often benefits may not be forthcoming even after purchase of the item, generally because of misuse. Eicher and Baker point out that the number of tractors in Africa is small, because of high cost, and the number in operation at any one time is insignificant. In Kenya only about 40% of the tractors owned by private contractors are operational at any one time. Fertilizers, because of the way they are used and distributed, seldom achieve their potential in Africa.

Understanding the Capital Inputs: Peasant farmers often have little knowledge of the use of capital inputs which have been developed for commercial farming. The use of herbicides in mixed cropping can be disastrous if suitable extension advice and knowledge on the use of herbicides is not available. Chemicals used in agriculture are often toxic and require special handling and use. The misuse of capital items, e.g. machinery, often results in breakages and because of unavailability and high cost of repairs, they are wasted.

Risk: Associated with the use of capital inputs and new methods of production there is considerable risk. Farmers from the subsistence sector and commercial sector have very different attitudes to risk. Large Scale units aim at profit maximization, and will use purchased inputs until their marginal value product just equals to their marginal cost. Communal farmers, while considering profits, place a lot of emphasis on risk minimization. Food security is of primary importance. In the Sahel this is illustrated by the planting of cash crops after food crops, and during drought periods there is a cutback in cash crop production in favour of food crops. Mixed cropping is another illustration of attempts to minimize risk. Peasant farmers are often suspicious of new/revolutionary methods of production and consider the risks involved to be too high ... they hold back on purchasing capital inputs (USDA).

High Energy Flux of Modern Methods Using Capital Inputs: From an ecological angle, capital inputs use a great deal of the fixed fuels supply on earth (e.g. in the production of 1 tonne of AN, 1.5 t of oil is used).

Cultivating, harvesting and processing implements used by African peasant farmers are relatively simple and require a low level of energy use other than human energy. The introduction of sophisticated capital inputs would transfer the system to one of higher eutrophy which is ecologically undesirable (USDA).

High Cost of Extension Services required to carry out research and advisory work. Detailed knowledge of the technology involved in the use of modern capital input items necessitates costly training.

High Cost to Society: Capital-input items are often imported, e.g. tractors, farm machinery, processors, etc. and their purchase involves the use of foreign exchange. A cost to society and an opportunity cost are involved as a result of using foreign exchange for importing agricultural goods in favour of other items useful to society (e.g. hospital equipment, teaching aids, electronic equipment etc.)
Employing Expatriates: Capital input items, especially machinery, often require the presence of specialists from other countries, who act as salesmen/advisers/repairmen, etc. Salaries are paid to non-nationals, and the money generally passes out of the country at the same time.

Measures to Improve the Situation

With a good or efficient marketing system, production will be commercialized and specialized leading to increased output. It will mean widespread use of improved techniques of cultivation and harvesting and of livestock raising resulting in higher yields per acre and per man, thus meeting the basic needs. It should not be forgotten that in improving the marketing system some fixed investment in agriculture and other related activities is vital e.g. storage facilities for both products and inputs and a good transport system. The marketing system should also carry incentives. In this country most of the necessary marketing activities are not being fulfilled and the final price paid for inputs is very high. Excessive costs arise from the weak position of the farmer when bargaining with the rural traders because of indebtedness to them, lack of capital, inadequate knowledge of prices and market conditions and in many cases lack of competition between the rural traders. Such conditions allow the wholesalers to obtain higher than necessary profits at the expense of the farmer. The local traders also incur high costs because of inadequate transport system, high risk caused by poor storage facilities, the lack of information and uncertain supply.

There are several strategies which would help to alleviate some of the problems facing communal farmers.

Input Subsidies Government could subsidize capital inputs until such a time as communal farming "got off the ground" and then later remove the subsidy when farmers no longer needed subsidies to encourage their use. Subsidies are however very costly to Government and are difficult to remove once the need falls away.

A guideline for the use of subsidies to promote the use of off-farm inputs is as follows:

The subsidy must be large enough to affect the initial "reward" for innovation significantly in the eyes of the farmer. Due to their cost, subsidies must be discontinued as soon as the conditions which first justified them no longer obtain e.g. when the innovation has been accepted. Research and field trials must have demonstrated that farmers are in the end likely to find the new practice financially rewarding even after subsidies have been dropped. If the input is not cost-effective without a subsidy it should not be subsidised initially.

A subsidy on an input will result in a lower price to the farmer and if all other prices remain constant, a fall in the price of an input would result in:

Increased farm profit; increase in the quantity demanded of the cheaper input; increase in the quantity supplied; an increase or decrease in the quantity demanded of other inputs depending on whether the inputs are complements or substitutes for the subsidised input (Ritson 1977).
Credit Facilities would enable the communal farmer to purchase capital inputs. This could work provided the repayment period is extended. It is not practical to expect rapid returns from investments in the communal sector. Credit facilities allow farmers without capital to adopt more productive technologies. They are however very difficult and expensive to administer for a large number of small farmers.

Efficient Extension Facilities to ensure the correct use of capital inputs, and to relay information of developments on research performed on new seed varieties, new fertilizer trials, etc.

**Rural Development** Improving the mail and banking systems to the communal areas would lessen the delay involved in the farmer receiving payment for last year's crop, so that he may be in a position to purchase capital inputs in good time before the next season. The improvement of education, health facilities at the same time would obviously also contribute to development of communal agriculture.

**Simple Inputs Suited to use by the Communal Farmer** for example, Uma Lele suggests that the "introduction of ox ploughs to increase labour productivity often seems an attractive alternative to tractorization. Since much of the necessary equipment can be produced and the oxen raised locally, this type of mechanisation avoids strain on foreign exchange. The cost of investment in a pair of oxen and a plough is, of course, much lower than that of a tractor". Maintenance and repairs are also no longer a problem. Similar arguments apply to the use of scotch carts in place of lorries. Indeed these are not as efficient substitutes, but if all communal farmers owned ploughs, oxen and scotch carts they would face far less problems.

**The natural predators of Pests to cut down insecticide costs.** Research workers could also breed pest and disease resistant plant varieties which efficient extension officers could relay to the farmer (Food Problems and Prospects in Sub Saharan Africa). Employing specific crop rotation and soil management techniques would also minimize the cost of biocides, as an input.

**Institutional Changes** In order to ease the problems of input availability in rural areas Marketing Boards could hold stocks and sell inputs. This would also improve use of the Marketing Boards for their activities are mainly after the harvest period, with little use of resources prior to planting. This would also improve transport use by ensuring a two way load. By combining these two activities credit advancement and repayment could be made more easily. This procedure would also remove the problem of late supply of inputs. The problem of imposing too many activities on the Marketing Boards which have got limited funds and experienced staff may result in failures and must be borne in mind.

Supply co-operatives would allow members to reach back towards the raw material source. By co-operating, the peasants would be able to use commercial facilities. The farmers would be able to buy in bulk and at a discount. Benefits arising from co-operatives do not only accrue to the members but to the community as a whole through increased competition. Co-operative activity at present is being limited by management, shortage of funds and the inability to ensure member loyalty, thus improvement in these areas is needed. Since co-operative societies and Marketing Boards rely on Government funds to an extent competition between these two must be avoided. These two bodies can act as substitutes if Marketing Boards participate in input supply.

Although private traders are frequently accused of operating exploitatively, their role in input supply is very important. These people operate in remote
areas where other agencies or bodies are not willing to operate. Private traders should be encouraged to participate fully in agricultural input supply by providing information and incentives such as credit to those who deal in off-farm inputs, provision of trucks adapted to the transportation of inputs at a discount. The infrastructure, especially roads, has got to be improved in rural areas. This will increase the number of traders who are willing to operate in remote areas. Rural traders have to be educated on the importance of dealing in off-farm inputs and encouraged to stock a comprehensive list of inputs.

A periodic market is a series of weekly or biweekly markets, operating for a half or whole day, taking place in a "ring" around a central place. Timing of each market fits within the pattern of local activity and linkages to the central place. Periodic markets would help eliminate transport problems, for they take place at a location near the farmers. The operation of periodic markets leads to infrastructural development in an area. Since a periodic market operates in one particular region or area the inputs can thus be adjusted to suit the local conditions.

The major improvement needed is in transport and communications. Deficient communication is limiting the range of marketing, confining sales to nearby consumers and thus preventing the growth of specialized marketing agencies and the development of more efficient procedures under the stimulus of competition. Many rural areas are inaccessible by road. In some areas the roads can only be used for a few months of a year because there are no bridges. A good example is the situation in Gokwe where a river between two areas makes the freight charges for a bale of cotton on one side $3.00 and on the other side $8.00. Most cultivation methods advocated are not being adopted because the inputs cannot be obtained due to lack of a transport system. Land which could be used more profitably by producing a certain crop is left idle or used for subsistence needs for the necessary inputs cannot be obtained. Lack of communication limits the mobility of the local inhabitants and thus their access to new developments and information.

High freight costs are one of the major reasons why local dealers charge high prices for the products they bring into these remote rural areas. For these people are the ones who have to transport the goods on their own. In some cases good roads are in existence but transport facilities are absent so that inputs are carried on top of buses. Damages and losses are frequent and the bus operators usually enjoy monopoly powers such that it may cost a farmer $4.00 to transport a bag of fertilizer from Harare to Chivu.

What is needed is the construction of feeder roads to remote areas and the restoration of the existing roads so that speed and good travelling conditions are achieved. Good roads will also mean more use and competition is encouraged. Given access to markets most farmers will make their own efforts to secure the necessary information and finance to improve their living standards, which increased yields through the increased use of inputs would help achieve.
REFERENCES


Central Statistics Office "Crop Production of Large Scale Agricultural Units Operating Outside Tribal Trust Lands". CSO, Harare 1979.


