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Smallholder outgrower schemes in Zambia

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Summary

1. The research was carried out in Zambia in March 1996 under the Overseas Development Administration's Crop Post-Harvest Research Programme. It followed earlier desk research into outgrower schemes in Sub Saharan Africa (Stringfellow, February 1996).
2. Two key findings of the desk research were that (i) the diversion of sales by outgrowers to alternative buyers has played a major role in undermining many schemes; and (ii) that lack of attention to the socio-economic issues that influence the participation of smallholders has also created problems. Both these factors have important implications for the successful design of outgrower schemes. Field research sought to establish to what degree the findings of the desk research were confirmed by the Zambian experience.
3. In the last year or two many outgrower schemes have been established in Zambia, a development which has attracted considerable interest from the government and donors alike. Commodities involved are traditional smallholder export commodities (tobacco, cotton), new export crops (fresh vegetables, paprika, castor seed) and a range of food crops (maize, sunflower, soya, cowpea, groundnuts, sorghum).
4. The emergence of these schemes appears to be related to political factors as well as efforts by commercial interests to exploit new export opportunities and efforts by donors to promote greater food security.
5. The most significant scheme is Lonrho's cotton scheme at Mumbwa which involves 25,000 smallholders. The acquisition by Lonrho of LINTCO, the former cotton parastatal, will increase the number of outgrowers to around 65,000. No other schemes are of comparable size.
6. The prefinancing of smallholder maize production through the SGS/Cavmont scheme has created many outgrower schemes but as the rationale behind these has been political rather than commercial, their performance has been poor.
7. Other schemes have been for food crops or high value export crops (mainly tobacco and paprika). Export vegetables are also produced under outgrower arrangements but the outgrowers are not smallholders, given the level of capital investment required to produce export quality vegetables.
8. Interviews with scheme operators confirmed the findings of the desk study that diversion of sales are a major problem facing those implementing outgrower schemes. The response has been to develop a range of management systems to improve supervision of smallholders and minimise risk of diversion. Feelings were mixed about the usefulness of the new Agricultural Credit Act in this regard.
9. A number of schemes have introduced peer group monitoring as a means to improve supervision. Bonuses for achieving high repayment levels are used to

increase incentives for group leaders and employees on a number of schemes. The concentration of growers in one area has also been used to improve supervision as well as cut down transaction costs.

10. The most significant strategy adopted by traders/processors promoting production of low value and food commodities under outgrower arrangements has been to reduce their exposure by confining their assistance to the provision of seed and extension advice. This is also a response to the established pattern of diversion of fertiliser away from the outgrower crop to maize.

11. Lonrho is taking this approach one step further by introducing a production system which effectively substitutes a higher labour input from the smallholder for purchased inputs, thus passing more of the production risk back to the smallholder. Despite positive early results, it is too soon to comment on the likely success of this strategy as the impact it will have on patterns of labour allocation within the household is not yet known.

12. Another response to the problem of fertiliser diversion has been the introduction of outgrower rotation packages which provide fertiliser for the maize crop, to be followed by another commodity (cotton, soya, cowpea) which uses the residual fertiliser in the soil.

12. This author's analysis suggests however that the long term viability of outgrower schemes for low value food crops is doubtful. As marketing systems develop for both the supply of seed and the marketing of outputs, smallholders will no longer need to rely on a contract with a trader to get access to the services they need. For their part, traders and processors will be able to purchase on the open market without the costs of administering a scheme. However in the short term, as Zambia's agricultural base is adjusting to the liberalised environment, outgrower schemes of the kind outlined in 9. above may have an important role to play.

13. The situation is different for higher value export commodities requiring high extension and capital inputs. Success requires institutional mechanisms which can reinforce the mutual interest that the buyer and the smallholder have in co-operation. A consensual approach to management is crucial. To date tobacco outgrower schemes have had a poor history in Zambia and efforts to introduce paprika among outgrowers have had little success, suggesting that insufficient attention has been given to developing the necessary business relationship between the two parties involved.

14. Given the above, the continuing importance of outgrower arrangements in Zambian agriculture, beyond the present transition period, will depend to a large degree on the ability of scheme operators to find ways of creating the kind of business partnership with smallholders which will guarantee their co-operation. Donors may be able to assist in this process by providing technical assistance and training for farmer organisations and by assisting in the design of financing systems which spread the prefinancing risk between the smallholder, investor and a financial institution. Venture capital funds may also assist new investors should the conservatism of the commercial banking system block new investments.

Smallholder outgrower schemes in Zambia

1. Introduction

1.1 Background and objectives

Field research in Zambia on outgrower schemes was carried out in March 1996 following preliminary desk research at NRI on the experience of outgrower schemes in Sub Saharan Africa (R. Stringfellow, 1996). This was undertaken as part of the British Overseas Development Administration's Crops Post-Harvest Research Programme which is managed by NRI.

Outgrower schemes are receiving increasing attention as potentially important private sector suppliers of agricultural services (input supply, extension, marketing, financial services) to smallholders and as an important means of promoting agricultural diversification. The desk research drew on the evidence of previous schemes to highlight the factors which have influenced their performance.

Two key findings of the desk research were that (i) the diversion of sales by outgrowers to alternative buyers has played a major role in undermining many schemes; and (ii) that lack of attention to the socio-economic issues that influence the participation of smallholders has also created problems.

With regard to (i), the research suggested that entrepreneurs have responded to the problem of diversion in a variety of ways. The most common is to **control the market for the commodity**. This can be achieved by introducing a new crop for which there are no other buyers in the area; introducing a crop which is not edible or amenable to local processing and sale; or selecting an area for operation which is inaccessible to competing buyers. Another approach is for the entrepreneur to **reduce his/her exposure to the risk of default** by limiting services to growers to the provision of inputs without advancing credit; by asking for security from outgrowers or by introducing a credit register. **Intensive monitoring of participants** especially at harvest time is another strategy.

These three approaches are all based on the idea of controlling the smallholder. A complementary approach is for the entrepreneur to create such strong incentives for the smallholder to remain within the scheme that he/she prefers not to divert sale of output to another buyer. Such a **consensual approach** involves effective management through the timely provision of services, prompt and fair payment and a good understanding of the smallholder's perception of the scheme.

With regard to (ii), key issues which were often left out of project design were those relating to the **availability of labour** (gender distribution of agricultural tasks within the household; seasonal patterns of agricultural labour, including outmigration); the priority attached by smallholders to **the production of food crops** over cash crops; the **opportunity costs** of producing the new commodity for the household and the household's **increased exposure to risk** as a result of adopting the new crop.

Information on the response of entrepreneurs to the problems created as a result was relatively scarce.

Complete Terms of Reference for the field research are provided in Appendix 1. In summary form, these were to establish whether recent experience of outgrower schemes has been consistent with the findings of the desk research and to highlight any innovative and effective responses to the problems of crop diversion and socio-economic constraints by scheme operators.

Support for the research was provided by the Zambian National Farmers Union which facilitated contact with scheme operators and participants.

1.2 Methodology

In country research lasted 3 weeks. Relevant reports and other sources of information, including interviews with scheme operators and others with outgrower experience (for a list, see Appendix 2) were used to develop an overview of outgrower schemes in Zambia and an impression of the degree to which the issues highlighted in previous NRI research are consistent with Zambian experience.

From this information a few schemes were selected for more detailed study. A detailed questionnaire was used to extract information on the design and operation of the scheme (Appendix 3) and where possible, a number of participating farmers were interviewed.

2. An overview of outgrower schemes in Zambia

2.1 The rationale behind outgrower schemes

In the last year or two many outgrower schemes have been established in Zambia, a development which has attracted considerable interest from the government and donors alike¹. Commodities involved are traditional smallholder export commodities (tobacco, cotton), new export crops (fresh vegetables, paprika, castor seed) and a range of food crops (maize, sunflower, soya, cowpea, groundnuts, sorghum).

The impetus behind different schemes has varied with the commodities involved. In the case of maize, the establishment of outgrower schemes through the Cavmont/SGS scheme has been a response more to political imperatives than economic ones, as the poor economic performance of the scheme suggests (see discussion of the SGS/Cavmont scheme below).

The establishment of outgrower schemes in other commodities, particularly cotton and tobacco, follows the more conventional logic that smallholders have a comparative advantage in the production of these commodities due to the labour intensive nature of their production.

¹ During the author's visit in March two other donor funded teams were in the country looking at issues of agribusiness development, including outgrower schemes - a Cargill Technical Services Team funded by USAID and a World Bank mission. The author met with the Cargill team on several occasions but was not able to meet the World Bank consultants. During the same period a Ministry of Agriculture team was conducting an evaluation of the Cavmont/SGS fertiliser credit scheme.

Zambia's maize monoculture, inheritance of the previous government's agricultural policy, is a third important factor. Liberalisation and political changes in South Africa have provided many new opportunities for agricultural trade both within and outside Zambia. But whilst demand exists, traders are finding that supply is limited given producers' attachment to maize. To increase supply, and in the absence of an effective government extension service, traders need to provide the seeds, extension advice and marketing infrastructure necessary to induce smallholders to diversify. Outgrower schemes are an institutional arrangement to achieve this.

Another aspect of diversification, and one expressed by several traders interviewed during the course of this research, is the obligation they feel to assist farmers to benefit from new opportunities. Donors are keen to encourage this attitude, especially where diversification can bring improvements in food security and household nutrition. At a workshop organised by the UNDP/GRZ/FAO's Integrated Crop Management/Food Legume Project in September last year collaboration between traders and farmers was a central theme (UNDP/GRZ/FAO, 1995). The EU funded Kabwe Smallholders Programme has taken the same approach and in March 1996 organised a meeting between traders and farmers representatives to discuss ways in which they could work together. It has also made available funds from the programme's marketing credit fund to entrepreneurs wishing to establish outgrower schemes (see below).

2.2 Recent research on outgrower schemes and the need for complementary research on success factors

A recent study on outgrower schemes in Zambia for the World Bank (Mano Consultancy (draft), 1995) provides useful information on their nature and performance. The objective of the study was to provide a better understanding of outgrowing and its implications for Zambian agriculture. Scheme managers were identified and information requested from them on a variety of issues including the selection of commodities and locations for schemes, scale of operations, services provided to farmers, farmer obligations, management structure and financing, marketing and processing arrangements. An analysis of the performance of different schemes was also attempted.

In its conclusions, the study addressed itself to issues of agricultural policy, highlighting areas where government action could assist the establishment of outgrower schemes. Legal and institutional innovations to facilitate the enforcement of contracts, government investment in rural infrastructure and the provision of "soft" money to those wishing to establish schemes were all recommended. Further research was also recommended on the impact of schemes on farming households, the environment, farming systems and the local rural economy to establish the efficacy of outgrower schemes in promoting sustainable agricultural and economic development.

These are all interesting recommendations which merit further consideration. A complementary approach is to take a more critical view of the operation of schemes themselves in order to extract information about the characteristics of successful schemes and to learn the lessons of failed efforts. Given the perennial problems of

crop diversion and scheme design highlighted in previous NRI research on outgrower schemes, information of this kind should be of particular use to those wishing to establish outgrower schemes themselves, or to those evaluating funding proposals for outgrower schemes. It is hoped that by focusing on these areas, the present study will complement research already carried out in Zambia.

2.3 Major outgrower programmes in Zambia

Cotton: Lonrho and the new Cotton Entrepreneurs

Lonrho established an outgrower scheme in Zambia for the production of cotton in 1992 following the complete liberalisation of the sector. It had been operating its own ginnery since 1986 and the aim in setting up its own outgrower scheme was to ensure sufficient volumes of seed cotton to supply the ginnery. Studies were done to compare the merits of operating its own cotton estates or operating an outgrower scheme and it was concluded that due to the high costs of infrastructural development, as well as quality advantages associated with manually harvested cotton, the company would invest in the smallscale sector. A 25,000 ha model was established based on the World Bank Training and Visit scheme with 15,000 smallscale outgrowers each growing 1-2 ha of cotton, sufficient in a normal year to supply the ginnery.

The Lonrho model has proved highly successful (details of the operation of the scheme are given in Sections 3 and 4). However despite its success in managing its outgrower programme, the company has decided to gradually withdraw from direct managerial involvement, passing this responsibility to smaller intermediary companies which it will prefinance and from which it will purchase the raw cotton. Lonrho's recent acquisition of the former cotton parastatal, LINTCO, is a major factor in this decision as it has increased the number of smallholders under the company to about 65,000. Management considers this to be a number far beyond what it can efficiently manage. Furthermore, the company believes that its comparative advantage lies not in managing smallholders, which is essentially an administrative task, but in research and development, financing and trading. It believes that it is therefore logical to refocus its resources in these areas, leaving smaller operators, who have the advantage of local knowledge and greater flexibility, to manage the smallholders.

This is a recent policy decision and to date only a few entrepreneurs have established themselves in the new role. One of these is Cotmark which operates in Central and Eastern Province. Its operations in Eastern Province were visited during fieldwork.

The SGS/Cavmont Agricultural Credit Management Programme

This is a publicly funded programme under private sector management to supply agricultural inputs to smallholders. SGS Zambia and Cavmont Merchant Bank were appointed by the government in the 1994/95 season and again in the 1995/96 season to distribute for cash or on credit government and donated stocks of maize seed and fertilisers through a network of private entrepreneurs. They were required to recruit the entrepreneurs (known as credit co-ordinators), monitor their performance and

ensure repayment for inputs advanced. In the 1995/96 season SGS recruited 79 credit co-ordinators, each on-lending to between 50 and 1,000 farmers.

Although the programme itself is not an outgrower scheme, what it has created in effect are many privately operated outgrower schemes. According to SGS, only 1% of inputs were distributed for cash in 1995/96. In return for pre-financing farmers, credit co-ordinators have therefore made agreements with smallholders that they will sell back their crop to them. Similar arrangements operated in the 1994/95 season but repayment was very poor. Credit co-ordinators repaid SGS only 4.2% of the amount advanced. This poor performance has been attributed to drought, late distribution of inputs and political interference. Cavmont, which operated in provinces less affected by drought, managed about 40% repayment.

In the 1995/96 season SGS claims that it has tightened up its selection and monitoring operations and many of the previous year's credit co-ordinators have been dropped. A target level of 60% repayment has been set. But whilst this would represent a very substantial improvement on last year's performance, it will not make the scheme financially viable. As a rough illustration, bearing in mind that it was maize production that was financed and the value of fertilisers per hectare for maize will account for approximately 50% of the value of the crop at harvest², the 60% target will only just cover the value of the inputs supplied. The balance will not be sufficient to pay producers for their labour, meet all management and supervision costs and provide a reasonable margin for the credit co-ordinators and SGS/Cavmont.

The implication is that even with all the disciplines provided by the private sector, a programme to pre-finance rainfed hybrid maize requires subsidy. Critiques of the scheme have given little attention to this issue, preferring to cite political interference and misuse of resources as the main source of the scheme's problems (see the *Zambian Farmer*, February 1996). But the intrinsic problems associated with financing rainfed production of a food crop are evident in the experience of credit co-ordinators who did distribute fertiliser to producers as required by the programme. Drought was a major contributor to the repayment problem but so was the difficulty of getting farmers to sell back to them when they had the option of either retaining production for home consumption, taking it to a local hammer mill or marketing it through another trader. As one credit co-ordinator explained, even with a big monitoring effort she only expects to purchase 50% of the production she has financed this year. Or in the words of another co-ordinator, who estimated that 80% of the crop she financed was sold to other traders, "maize is a very bad crop for outgrowers".

This view is entirely consistent with experience elsewhere. In the face of a well developed market for a commodity, outgrower relationships are difficult to maintain. But in Zambia the rural population's continuing dependence on hybrid maize has created political pressure for the extension of the old policy of institutional credit, with SGS's and Cavmont's participation providing the private sector fig leaf behind

² This assumes a fertiliser price per bag of K17,000, 8 bags of fertiliser per hectare and a yield of 25 bags per hectare with an inter-mill value at harvest of K12,000 each.

which the government can hide. In a period of economic transition, the decision to continue subsidising producers by other means may be the right one in the short term, but from a longer term perspective, if it weakens incentives to diversify out of hybrid maize production and develop more appropriate farming systems, it may not be so beneficial.

The scheme has not required credit co-ordinators exclusively to pre-finance maize production. Fertiliser has been used mainly for maize because that is what smallholders want to grow. In the scheme's second year of operation, a number of credit co-ordinators have introduced other commodities (castor, cotton, cowpea, sunflower, soya) for which markets are less developed and input requirements are less. Some have combined this with intensified selection, monitoring and supervision of smallholders to further minimise risk. Thus despite first appearances, the scheme may be playing a useful role in promoting diversification among a very reluctant smallholder population.

Kabwe Smallholder Development Programme

For the 1995/96 season the Kabwe Smallholder's Development Programme (KSDP) invited prospective outgrower scheme operators to submit applications for funding to the Programme's Marketing Credit Fund. The conditions set down by the programme were that the schemes should provide inputs, technical advice and marketing services to smallholders. Funds were not to be used to finance maize as a major objective was to promote diversification. Loans were made for an eleven month term at an interest rate 5% below that of the Barclays Base Rate. Two hundred per cent security was demanded. Scheme operators were required to draw up written contracts with all farmers in which the obligations of both parties were clearly set out in compliance with the 1995 Agricultural Credit Act. This would commit the farmer to repaying the loan with interest and selling all his crop to the scheme operator and would commit the scheme operator to providing specified services to the farmer.

Eight schemes were funded with numbers of participating farmers ranging from 40 to 400 per scheme. Commodities included were cotton, sorghum, sunflower and soybeans. Interestingly all the scheme operators were supplying fertiliser for maize to their farmers, although under the conditions of the KSDP this cost could not be met from project funds. The implication is that a diversification strategy has to include maize rather than substitute it, a finding consistent with other schemes examined during fieldwork (this theme is developed in Section 4).

As repayment is not due for several months and this is only the first year of their operations, it is too early to judge the success or otherwise of schemes funded under the KSDP. The officer monitoring the schemes on behalf of the Programme did observe that the quality of supervision provided by scheme operators was variable with some providing their own field officers whilst others had simply left seed and other inputs with government extension officers, expecting them to provide all the necessary supervision to farmers. Another observation was that little fertiliser was being used on the new commodities as farmers were continuing to prioritise maize production. On the question of contract compliance, the officer had heard many farmers expressing some confusion about what they actually owed the scheme

operators (some contracts had not included the value of inputs and any interest charges due) and had even expressed reluctance to commit themselves to selling all their crop to the company that had financed them on the basis that if another trader offered a better price, why should they not sell to him? Other farmers were known to have received financing from more than one scheme. Early indications therefore are that these new schemes are likely to encounter the same problems common to other schemes elsewhere.

The UNDP/GRZ/FAO's Integrated Crop Management/Food Legume Project and other legume outgrower schemes

Although not an outgrower programme itself, the UNDP/GRZ/FAO project, which seeks to promote legume production and utilisation among smallholders in order to improve household food security, has provided technical assistance and support to a number of outgrower schemes producing legume seed. Commercial seed companies have not been very interested in multiplying improved varieties of legume seed in Zambia because legumes are self-pollinated limiting demand for new seed to a level which does not justify substantial commercial investment. However to ensure that sufficient seed is produced to meet a growing demand among smallholders, the project is supplying training in seed multiplication through a programme in 30 districts of the country. Following training, some seed growers have set up their own outgrower schemes. In Kaoma, one farmer has contracted 10 outgrowers each growing 1 ha of cowpea seed. She undertakes the extension work herself and supplies all the inputs on credit to farmers. In Katete Cotmark, a company operating a cotton outgrower scheme, has received assistance from the project for selected farmers who are multiplying soya and groundnut seed. Next season the company hopes to distribute this seed among many more of its outgrowers for commercial production.

Two other new schemes under which cowpeas are being produced this season are in Southern Province (Advance Seed Limited) and in Chipata (IMPI Agriculture Ltd). Production is intended for commercial sale with a strong demand identified both domestically and in the southern African region.

In Northern Province a private company, Solye Enterprise, has 167 smallholders growing soybean for which they provide seed, extension support and a guaranteed market. The company has trained 30 processors to heat treat soya for processing at a central mill. The soya flour is then marketed throughout the country.

Africare and sunflower production

The Africare project bears much similarity to the UNDP/GRZ/FAO project discussed above in that its objective is essentially to improve food security among smallholder farmers by promoting the production and processing of alternative food crops to maize. It is not therefore an outgrower programme but through the promotion of the ram press which processes the sunflower seed into oil it has created a new demand for seed in areas where supply has been limited. Small outgrower schemes, often involving just a few local farmers, have been established by ram press operators who wish to ensure a regular supply of seed for processing. According to Africare staff, the small size of these schemes and the fact that the operator personally knows all the involved farmers has contributed to the success of such operations.

Africare's success in promoting the ram press, combined with a run of poor seasons for sunflower due to the drought, has squeezed the supply of sunflower in the country, creating problems for the industrial oil millers. Some have responded by setting up their own outgrower schemes to secure supplies. Southern Oil Mills set up a scheme in 1995 involving some 50-60 farmers to whom it supplied seed (but not fertiliser). High Protein Foods in Mazabuka operates a scheme involving some 500 farmers, cultivating an area of about 2,500 ha. Although it has experienced problems of repayment and the diversion of inputs to other uses, the company remains committed to the scheme. Without it, it believes that it would not be able to source the oilseeds it requires for its mill.

IMPI Agriculture in Chipata is also pre-financing sunflower production among smallholders this season and is in the process of drawing up a contract for sale with Lever Brothers in Malawi.

Tobacco

A number of outgrower schemes in tobacco are operating in Zambia (schemes were visited in Chipata and Serenje and there are others in Lundazi and Chama). However in contrast to the experience of Malawi, where tobacco is widely grown by smallholders under the estate system, smallholder outgrower schemes in Zambia have had a difficult history. Although tobacco shares certain characteristics with cotton which lend itself to smallholder production (it is labour intensive and is an export crop with limited local demand) it is a commodity requiring much greater skill, both in pre and post harvest operations, and a much greater outlay of capital because of high fertiliser requirements. Therefore if grown under outgrower conditions, it requires intensive management and supervision.

The projects in Chipata and Serenje have recently come under new management. It is too early to judge whether greater attention to managerial issues will result in improved performance but a number of strategies that the new management teams are currently implementing or are considering are discussed in Section 3 below.

Paprika

Paprika has been recently introduced into Zambia by Cheetah Zambia Ltd which is investing in state of the art processing equipment for the commodity. The company has identified a strong market in Europe for paprika which is the second most important spice in world markets. Paprika shares similar production characteristics to tobacco, requiring skilled husbandry before and after harvesting and large amounts of fertiliser. It is highly labour intensive.

In the production of the commodity, the company would like to operate a system similar to that currently being introduced by Lonrho which would involve contracting intermediaries to manage groups of smallholders, leaving the company to focus its resources on processing and trading. With each smallholder cultivating about 0.25 ha (the recommended area for one smallholder unit) the company would require groups of at least 40 farmers with a total cropping area of 10 ha within a 5 mile radius. These

represent the minimum conditions, given transport and extension costs, for a viable investment.

This approach has worked in Malawi but in Zambia neither commercial farmers nor traders have put themselves forward as intermediaries, despite extensive efforts by the company to promote the arrangement. As a result only a handful of smallholders are growing paprika in Zambia (in contrast to Malawi where 750 smallholders are growing paprika this season).

Export vegetables

In the last few years Zambia has entered the market for the export of fresh flowers and vegetables to Europe. Loans from the European Investment Bank and the European Export Development Fund have assisted this process. The two major farms supplying these markets are York Farm and Agriflora, both of which are located near the airport. Their success has created more demand than they can supply and as a result they are contracting outgrowers to increase output. However the industry requires high levels of capital investment in order to produce and maintain products at quality standards acceptable in European supermarkets, requiring outgrowers to invest in expensive infrastructure (refrigerated vans, packing sheds). This has excluded smallholders from entering production.

The Chief Executive of the Zambia Export Growers Association sees possible future potential in certain horticultural commodities which require intensive labour input (fine green beans being one such commodity which has been produced under smallholder outgrower arrangements in several African countries). He suggested that in these cases aid funds could be used to "prime the pump", a justified expenditure given the potential social benefits from involving smallholders. At the moment however ZEGA is not involved in any projects of this kind.

In Chipata one entrepreneur is promoting birds eye chillies among outgrowers. He has identified a market in Malawi and has some 40 ha under cultivation this year. Relatively low input costs combine with a high labour requirement to recommend it as a suitable outgrower crop.

2.4 Production and marketing characteristics of commodities grown under outgrower arrangements in Zambia

Before discussing selected issues relating to the design and management of outgrower schemes in Zambia, a summary is provided in Table 1 of some of the commodities currently under outgrower production with details of their major characteristics in relation to production and marketing. As will become apparent in Section 3, these characteristics play a major role in determining the outcome of outgrower schemes.

Table 1: Characteristics of a number of outgrower crops in Zambia³

commodity	production characteristics							marketing characteristics		
	cropping cycle	cropping requirements	cost of purchased inputs per ha	expected average smallholder yield per ha (kg)	expected value per ha 1. farmgate price	expected value per ha 2. into-mill price/price paid to trader (if not processed in Zambia)	cost of purchased inputs as % of expected output value (trader price)	edible	locally processed/traded	national/export markets
maize	Planted Nov./Dec.; harvested May/June	Requires adequate moisture as susceptible to drought; ploughing unless under minimum tillage system; 3 weedings	seed: K 20,000 fertiliser: 8 bags @ K 17,500 = K 140,000 TOTAL = K 160,000	25 bags	K 10,000 x 25 = 250,000	(into-mill price) K 12,000 x 25 = 300,000	53%	yes	yes - hammermills increasingly widespread in all areas; widely traded - density of trading network varies with location	within Zambia maize flow from surplus to deficit areas; cross border trade in outlying areas (to Zaire, Angola etc.)
cotton	Planted Nov./Dec.; harvested May/June	Diligent pest control; regular weeding; harvesting - labour intensive - 2 ha maximum for average smallholder	Lonrho cost estimate (K 25,000) well below LINTCO (K 63,000)	650 kg	K 300 x 650 = K 195,000	(raw cotton, into-mill price) K 450 x 650 = K 292,500	Lonrho: 8% LINTCO: 22%	no	5 ginneries in Zambia, 3 owned by Lonrho; growing numbers of buyers competing to buy seed cotton but limited competition in processing	domestic textile industry limited; majority of cotton traded internationally
sunflower	Planted Dec./Jan; harvested April	Late planting reduces yield; should be planted in rows; weed control, esp. in first 4 weeks; less moisture sensitive than maize	seed (record) = K 4,000; fertiliser (6 bags) = K 105,000	(a) With fertiliser and good management = 1500 kg (b) Without fertiliser and with poor management = 500 kg	(a) 30 x 50kg bags @ K60-80,000 = K180-240,000 (b) 10 x 50kg bags @ K6-8,000 per bag = K60-80,000	(into-mill price) (a) 30 bags @ K10-12,000 = K300-360,000 (b) 10 bags @ K10-12,000 per bag = K100-120,000	(a) 32% (b) 5-7%	yes	yes - growing numbers of ram presses in rural areas encouraging greater trade in sunflower	oil milling in the larger towns - need to compete with cheap imported oil (e.g. soya from South Africa)

³ Information for this table was collected from a wide variety of sources consulted during fieldwork. Its purpose is to provide a rough indication of the economic factors influencing the outcome of outgrower schemes using the best information available at the time of fieldwork. Farmgate and inter-mill prices used are the expected prices given by trading companies at the beginning of the 1996 marketing season. Where necessary, prices were converted to kwacha using the March 1996 exchange rate (US \$1 = K 1090).

commodity	production characteristics							marketing characteristics		
	<i>cropping cycle</i>	<i>cropping requirements</i>	<i>cost of purchased inputs per ha</i>	<i>expected average smallholder yield per ha (kg)</i>	<i>expected value per ha 1. farmgate price</i>	<i>expected value per ha 2. into-mill price/price paid to trader</i>	<i>cost of purchased inputs as % of expected output value (trader price)</i>	<i>edible</i>	<i>locally processed/ traded</i>	<i>national/ export markets</i>
cowpea	Planted Dec.; harvested from March	Good rains can cause aphid problems; requires 1 or 2 weeding; susceptible to weevil infestation after harvest; drought resistant - 300 mm minimum rainfall; fixes nitrogen	seed = K 10,795 minimal fertiliser required: 1 bag @ K17,500; aphid treatment: K1,000; TOTAL: K 29,000	(a) With fertiliser: 1000 kg (b) Without fertiliser: 700 kg	(a) 11 bags @ K18,000 = K 198,000 (b) 8 bags @ K 18,000 = K 144,000	(a) 1000 kg @ K 250 = K 250,000 (b) 700 kg @ K 250 = K 175,000	(a) 12% (b) 7%	yes	not widely consumed in Zambia - traditional varieties grown more for leaves	regional markets in Angola, Mozambique;- Zambia has the best seed varieties in the region, therefore demand for seed
sorghum	Planted Dec.; harvested May/June	1 or 2 weeding - once established competes well against weeds; susceptible to bird damage before harvest	seed: K 2,850 fertiliser: 4 bags @ K 17,500 = K 70,000 TOTAL (a) with fertiliser = K 73,350 (b) without fertiliser = K 2,850	(a) With fertiliser: 2500 kg (b) Without fertiliser: 1000kg	(a) 28 bags @ K8,000 = K 222,000 (b) 11 bags @ K8,000 = K 88,000	(a) 2500 kg @ K 120 = K 300,000 (b) 1000 kg @ K 120 = K 120,000	(a) 24% (b) 3%	yes	yes - can be processed in hammermills	used in the production of beer; export markets in Botswana, Namibia and South Africa
castor	Annual and perennial; planted Dec./Jan; harvested June/July	Requires only one weeding; adds nutrients to soil	seed: K20,000 fertiliser : 1 bag = 17500 TOTAL = K 37,500	1200 kg	n/a	K 260/kg = K 312,000	14%	no	very limited local demand (though TAZ building new processing plant)	limited domestic demand; export markets in Zimbabwe

commodity	production characteristics							marketing characteristics		
	<i>cropping cycle</i>	<i>cropping requirements</i>	<i>cost of purchased inputs per ha</i>	<i>expected average smallholder yield per ha (kg)</i>	<i>expected value per ha (96 harvest)</i> <i>1. farmgate price</i>	<i>expected value per ha (96 harvest)</i> <i>2. into-mill price/price paid to trader</i>	<i>cost of purchased inputs as % of expected output value (trader price)</i>	<i>edible</i>	<i>locally processed/traded</i>	<i>national/export markets</i>
tobacco	Transplanted in Nov.; reaping March/April; curing March-May	Requires intensive and skilled labour - seedling preparation; transplanting; pest and nematode control; suckering; reaping; curing; grading; 0.5 ha maximum for average smallholder	12 bags fertiliser @ K 17,500 = K210,000; seed and chemicals = K14,000 TOTAL = 314,000	1000kg	Prices vary significantly by grade - in 1996, Chipata prices by grade varied from K200 - K2,000/kg	K 1,500/kg = K1,500,000	21%	no	some petty trading to supply limited domestic market	Crop sold through TAZ to Zimbabwe
paprika	Transplanted at the beginning of the rains; harvested after the rains at 7-14 day intervals	Requires intensive and skilled labour - seedling preparation; transplanting; pest control; harvesting; drying; de-stalking and de-seeding; baling; 0.25 ha for average smallholder. Minimum rainfall requirement 800mm	K 480,000 (using Cheetah's costings minus labour costs)	1000kg	K490	K 1,635 x 1000 = K1,635,000	30%	no	no indigenous use as it is a new crop	Good export market and Cheetah pioneering processing; some competing traders emerging

3. Constraints and strategies to overcome them: (1) Diversion of sales

The diversion of sales by smallholders to other traders was a concern to all scheme operators interviewed during the course of the research. In this section the strategies adopted by them to overcome this constraint are reviewed.

3.1 Controlling the market for the commodity

Introducing a new crop

By introducing a new crop into a country or region the entrepreneur has the certainty of knowing that smallholders have no alternative marketing channel at harvest. Whiterose Farms, which introduced castor seed to outgrowers in 1995, believes this is an important factor in the success of its scheme (castor grows wild in Zambia but has not been commercially produced before). When IMPI Agriculture introduced birds eye chillies to its farmers in Chipata it knew that they would be dependent on the company for finding a market. Cheetah Zambia had the same advantage of facing no competitors when it introduced paprika into the country a few years ago.

Of course the advantage of market leadership can be short lived: if a commodity is introduced successfully it will encourage others to enter the market and competition for sales will develop. Cheetah is already facing this problem as traders move in to try and purchase paprika that it has financed⁴. To safeguard its investment, it will have to adopt other strategies.

From the farmer's perspective, competition among buyers is positive. But where this competition undermines existing contracts between buyers and producers, outgrower type arrangements which involve pre-financing are likely to disappear. For commodities with minimal extension and input requirements, the impact on the producer may be limited if he is able to finance and manage his own production. But where these requirements are considerable, as in paprika production, the smallholder is likely to find that he can no longer afford to produce the commodity.

Co-operation among buyers

Another strategy open to buyers is to try and co-operate with competitors. This can take the form of agreeing not to buy from producers financed by competitors and could extend to agreeing a common price.

As noted above, the restructuring of the cotton industry in Zambia is creating a situation where there is much more competition at the farm level for cotton sales. According to a number of sources, the companies involved are already passing information to each other on the farmers they have pre-financed and are negotiating on operational zones for each company. Despite this, there is evidence in Kabwe that individual smallholders have received financing from several different sources for this season.

⁴ Under the 1995 Agricultural Credit Act this is illegal. To the extent that it can be enforced, the Act will assist entrepreneurs like Cheetah but many of those interviewed feared that the Act would be difficult to enforce given the difficulty of monitoring smallholders and the expected delays in bringing legal action.

Since taking over LINTCO early this year Lonrho has acquired considerable control over prices. As it now owns all three cotton ginneries in the centre of the country, it sets the prevailing into mill price for Central and Southern Provinces (Clarke Cotton, a South African company, purchased the ginny in Chipata but the distance between this and the Lonrho ginneries is likely to eliminate any incentive for traders to take advantage of price differentials). This will limit the degree to which traders at the farmgate can adjust their prices to compete for purchases. Lonrho's market power can be seen therefore to have a similar effect to a pricing agreement.

Managers of tobacco schemes in Chipata are also considering exchanging information on the farmers they have financed as well as demarcating operational zones to assist with marketing.

Financing a crop with limited local demand

As well as alternative marketing channels, alternative uses for a crop present the scheme operator with a higher risk of crop diversion. By introducing a crop which is inedible (castor bean, cotton, tobacco) or which is not customarily consumed or processed (soya, cowpea) a scheme operator is able to reduce the risk.

In the latter case however it is likely that over time the greater availability of the commodity in an area will lead to a change in consumption patterns and the development of local demand. This process will be hastened if new processing technologies become available. Both the Africare programme for sunflower and the FAO/GRZ/UNDP legumes programme are already having an impact on local consumption patterns by promoting through processing the domestic consumption of commodities traditionally viewed as cash crops. With time, it is likely that local marketing systems will develop for these commodities to the extent that prefinancing arrangements will become difficult to sustain.

Operating in a remote location with poor trading links

One of the factors contributing to the success of Solye Enterprises, which processes locally produced soya, has been its location. As the area is isolated, options for diversion of sales are limited and by adding value through processing the company is able to offset the high transport costs involved in marketing the commodity.

3.2 Minimising exposure to the risk of default

Limiting services to growers

By limiting services to the delivery of inputs without prefinancing them an entrepreneur is only exposed up to the value of transport and delivery costs incurred. Arguably this relationship between entrepreneur and producer is too slight to constitute an outgrower relationship but in Zambia it has emerged in the maize sector precisely because many traders have found any greater commitment to producers unsustainable for all the marketing risks already described.

In the production of other commodities scheme operators have limited services to the prefinancing of seed but not fertiliser. Advance Seed Ltd has provided cowpea and

sorghum seed to 2-3,000 farmers in the Monze area on the basis of a written contract which commits the farmers to selling back the crop at harvest. For cowpea, the value of the seed represents about 7% of the expected value of the output (assuming no fertiliser is used in production) and for sorghum, 3%. Such low rates of exposure mean the company can sustain a degree of crop diversion.

Not supplying fertilisers may have disadvantages in terms of yield. Advance Seed estimates that without fertiliser application, sorghum yields are reduced from 2,500 kg/ha to 1,000 kg/ha. If the company is concerned with volume production then it will have to reach a much larger number of outgrowers, with all the additional administrative and transport costs, if it is to attain high levels of production. However for cowpea there is a much less marked trade-off in terms of yield: without fertiliser these fall from around 1000 kg/ha to 700 kg/ha. Thus the trade-off between a risk minimisation strategy and operational costs appears to be far less significant than for sorghum.

On the other hand there is no certainty that were the company to supply fertiliser, it would be used on the target commodity. Lonrho's prefinancing package for cotton does not include fertiliser although chemicals are included in addition to seed. Fertiliser would double yields if applied to cotton but the company's experience has been that when farmers receive fertiliser for cotton they will divert it to maize production and any yield advantage is lost. This confirms NRI findings elsewhere that smallholders often prioritise food crop production over cash crops.

Selecting crops with low input requirements and drought tolerance

The contrast in yield differentials between unfertilised and fertilised sorghum and cowpea suggests that an entrepreneur can reduce his exposure by selecting commodities with low fertiliser requirements. Equally the selection of commodities with low susceptibility to disease and pests will reduce the need for extension advice and chemical inputs. Drought tolerance will reduce the risk of crop failure and mass default by outgrowers.

Minimising purchased input costs

From the scheme operator's perspective, a smallholder's ability to mobilise household labour represents the main economic advantage of outgrower arrangements over other forms of production. A strategy that maximises this advantage in respect to other factors of production is therefore more efficient. It also reduces the value of purchased inputs, and, if these are pre-financed by the company, its risk.

Lonrho is piloting minimum tillage among its outgrowers. This promotes manual land preparation in the place of ox or tractor ploughing. For the typical smallholder who cultivates one or two hectares, this allows him to mobilise family labour for land preparation rather than purchase ploughing services. Assuming family labour has a low opportunity cost, the smallholder will benefit. In addition, minimum tillage has benefits in terms of soil moisture retention (which, given the frequency of droughts in Zambia, is of considerable importance) and it encourages early planting which has very significant yield advantages. Nevertheless, it should be recognised that the low input approach results in low yields compared to other leading African producers. In

Mali for example, yields averaged 1394 kg/ha compared to 783 kg/ha in Zambia in 1994.

It is too early to judge the success or otherwise of Lonrho's strategy. However some of broader socio-economic issues that the company will need to take into consideration when evaluating the performance of the pilot programme are discussed in Section Four.

More careful use of agrochemicals has been another strategy adopted by Lonrho to reduce input costs. The company has used its extension system to educate outgrowers about common cotton pests and their natural predators. Outgrowers are taught only to apply chemicals when relative numbers of beneficial and malign insects reach certain levels. This requires them to monitor (or "scout") fields regularly, but given the high cost of chemical inputs, there are considerable savings.

Asking for security

Some operators have introduced different forms of security into schemes. Following a number of seasons in which the company experienced a very high rate of default, for the 1995/96 season BIMZI has required its outgrowers to put up collateral, usually in the form of livestock. IMPI Agriculture is considering the introduction of a security fund for its outgrowers which would require them to put up 10% of the value of the inputs pre-financed at the beginning of the season.

Selecting farmers

Another strategy to reduce risk is for operators to take care with selecting farmers to remove bad risks. As well as asking for collateral from farmers in 1995/96, BIMZI's officers visited homesteads to establish their permanency, inspected fields after ploughing before fertiliser was delivered, confirmed the farmer's residence through the local headman or chief and requested to see his repayment record at other lending institutions. The number of farmers who met these criteria were few (40) and their size of operations averaged 15 ha. Whiterose Farms, which has financed maize as well as castor this season, required smallholders to be cultivating a minimum of 3 ha.

A number of traders receiving funding through the Kabwe Smallholder Programme consulted the records of Lima Bank, CUSA and ZCF Financial Services to screen out farmers with poor repayment records.

In Katete, Cotmark uses a system of elected group leaders to identify and recommend farmers for inclusion in its outgrower programme. This system was in operation in the area previously under LINTCO. In addition, many of the company's employees are former LINTCO officers and are able to use their local knowledge and experience to select farmers.

Lonrho recruits its farmers after harvest, assessing the hectareage it will finance on the basis of the family size (a family of 6 is required for 2 ha of cotton). Growers are given seed and their performance in the early stages of cultivation is monitored by the extension system. It is during this period, before any substantial investment by the

company, that the most important assessment of the farmer is made. If he is performing well, he will receive chemicals for pest control.

IMPI Agriculture chose its farmers from among those in an area where there was already considerable experience with vegetable production. Farmers were selected from 3 villages, all within a short distance of each other, to facilitate monitoring and supervision. Selection of individual farmers was based on an assessment of their performance over the previous three years which was known to the company's director through his previous work in the area.

Limiting membership but extending hectareage

Once an entrepreneur has identified a reliable farmer, a cost effective means of increasing total output might be to encourage an outgrower to extend his area rather than incur all the transaction costs of identifying a new farmer. Whiterose Farms has found that its outgrowers tend to be smallholders with a slightly higher than average hectareage of between 20 and 30 ha, as these are the farmers who are most prepared to diversify out of maize. To expand its operations, the company intends to encourage these existing farmers to increase their production of castor rather than bring in new ones.

A weeding out process has produced similar results at BIMZI. With the introduction of the new screening criteria discussed above, numbers of farmers participating in the scheme have dropped from several hundred to only 40. But the 40 left in the scheme are all emergent farmers, not smallholders (taken to mean farmers with less than five ha).

For commodities with a high labour input, a strategy based on maximising household labour limits the unit of operation. Hence Lonrho's continuing commitment to the smallest farmers.

3.3 Intensive monitoring of participants

The management function of scheme participants has two aspects: to provide extension and support and to monitor the development and harvesting of the crop up until the time it is purchased by the company. The intensity of the first function should vary with the commodity itself and the degree of experience that outgrowers have in producing it, whilst the intensity of the second function should increase at harvest time especially for commodities where there are many competing buyers.

In Zambia Lonrho has the most highly developed extension and monitoring system, based on the World Bank's Training and Visit system. The Regional Manager is responsible for an area of 25,000 ha which is divided into three zones. Under the three zone managers are 11 centres of 725 ha managed by an extension officer and under each of these, there are four sub centre extension officers responsible for about 180 ha each. Farmers within the sub centre area cultivate approximately 2 ha each and are organised, usually by village, into groups of ten. These groups receive a visit every fortnight from the extension assistants.

Extension officers and assistants are supplied with bicycles. Their role is to distribute seed and chemicals, conduct extension work, distribute packing materials and buy the crop when it is harvested. They receive regular training and are paid incentive bonuses for high yields.

The system appears to operate well. Loan recovery is 93% and Lonrho's confidence in the cotton subsector has led it to buy LINTCO, extending the area it is managing from 25,000 ha to 65,000 (although as noted above, its new strategy is to contract out the management of outgrowers).

Key elements of the system are the regular contact of extension officers with farmers (this is especially critical at harvest time when officers collect bales of cotton directly from farmers to ensure there are no side sales); the group approach (see below) which encourages self-monitoring by farmers; careful selection and training of extension officers; incentive payments for high yields; regular reporting by extension officers to their supervisors and a system of forward work plans which allows supervisors to check up on those under them.

Cotmark operates a similar system for its 2,400 farmers with 6 depot buyers operating under its two zone extension managers. However the 200 farmers under each depot buyer are organised slightly differently: they are divided into 4 areas and each area is visited once a week by the depot buyer who holds a meeting with the farmers as well as visiting individual farmers. Farmers representatives also play a more active role in the scheme's management. Each area has an elected committee and the four areas elect a group leader to represent them. As already indicated, the group leaders are involved in the selection of farmers for the scheme and are expected by the company to play a monitoring role as well. They are provided with bicycles to assist them in this work and an incentive bonus for high recovery rates. Once a month they meet together with the company for which they receive a sitting allowance.

Cotmark's co-option of farmer leaders is based on the LINTCO model which was introduced in 1990. The strength of the approach lies in the way it internalises local knowledge and the influence of local leaders to further the interests of the company. On the other hand, the group leader's role in the selection process invests him with considerable power over his fellow farmers, making the system vulnerable to abuse at the hands of unscrupulous leaders. The Lonrho system, which relies entirely on its own employees to select farmers (who in turn are regularly monitored by their supervisors), is more transparent and may therefore be less open to abuse. Field level supervisors are recruited from outside a given locality to ensure impartiality.

The Lonrho system does use self-monitoring by farmers, though the emphasis is on groups rather than group leaders. Self monitoring through groups has also been used by Nyondo Enterprises and Bangana Limited, which are both receiving funding under the Kabwe Smallholders Programme and by IMPI Agriculture in Chipata. Interestingly, Bangana has used groups based on family networks rather than geographical location. Another interesting variation on the group theme used by IMPI Agriculture is to involve groups of farmers in extension visits as this encourages competition among farmers and improves their performance

In addition to using farmer to farmer extension, IMPI Agriculture has co-opted Ministry extension officers to work for the company. The same approach has been adopted by Advance Seed Limited and a number of the schemes funded by the Kabwe Smallholder Programme. As all these schemes are in the first year of operation, it is too soon to assess the success of this approach. A key factor may be the additional incentives the private company offers to extension officers to work on its behalf.

Another aspect of monitoring is to ensure that as soon as farmers are ready to harvest, all necessary inputs and services are in place for purchasing. IMPI Agriculture anticipates that it will face considerable competition to purchase sunflower in Lundazi district, where it has pre-financed growers this season, because there is an established market there for the commodity. By moving in as soon as the harvest is ready, announcing a price and supplying its growers with bags, it plans to capture the market before any competitors can act.

Advance Seed Limited plans to adopt a similar strategy, intensifying its presence in the area at harvest time and setting up mobile purchasing camps in the different localities. To purchase from farmers in remote areas it will hire in additional transport.

3.4 The Agricultural Credit Act

Since 1995, another loan recovery strategy available to scheme operators is to invoke the Agricultural Credit Act. This gives the lender the right to take legal action against a farmer who violates his contract (provided it is drawn up in compliance with Part III of the Act). It also allows for legal action to be taken against a third party who purchases a commodity from a farmer in violation of a previously signed contract.

The attitudes of scheme operators interviewed during the course of this research on the usefulness of the law varied considerably. Advance Seed Limited and Cotmark have given it considerable emphasis when recruiting farmers. In the Monze area, where Advanced Seed operates, many farmers have witnessed the severe measures taken by Lima Bank this season to recover assets from indebted farmers and the company believes that this has provided an effective deterrent. Cotmark has educated farmers' group leaders on the Act and is encouraging them to threaten farmers caught diverting sales with legal action. On the other hand Lonrho's General Manager believes the Act is unenforceable and therefore of limited use. He believes a far more effective deterrent to defaulters is "blacklisting", exclusion from the scheme in future years

The coming harvesting season will be the first in which the Act will apply and will be an important test of its efficacy. On a more practical note, if scheme operators do want to use the Act they must ensure that contracts comply with the law. A number of contracts examined during this research failed to include all the information required by the law and would not therefore be enforceable.

3.5 The Consensual Approach

All of the strategies so far discussed attempt to control the outgrower and/or limit the risk facing the scheme operator. Another approach is for the entrepreneur to build up a good relationship with the outgrower in which both parties recognise the mutual benefits of co-operation. Adequate incentives, in the form of payments and other benefits, as well as good communication between scheme operators and outgrowers, play a central role in this process. This approach is not an alternative to effective supervision but complementary.

Prompt and fair payment

Ensuring that the farmer receives a fair and timely return for his labour is fundamental to the success of any scheme. If payments are not made quickly (preferably in cash on delivery) or are below the price offered by another trader in the area, the company may experience severe difficulties in purchasing the crop.

An extreme example of this is provided by a tobacco outgrower scheme in Serenje district. In 1995 payments to farmers for output delivered in May were delayed until November due to a number of managerial problems. Farmers' confidence in the ability of the company to purchase appears to have been so damaged by this experience that this season they are selling tobacco to local fishermen who purchase small amounts of the commodity at a price that is allegedly only a sixth the price offered by the company.

Delayed payments were one of the factors that undermined LINTCO's position in the face of competition from Lonrho prior to the take-over this year. Lonrho, which as an international trading company is able to draw on external sources of financing, was able to pay farmers much more promptly than the parastatal. Under its present system, Lonrho farmers are paid within 14 days of procurement.

IMPI Agriculture intends to pay cash to its producers this season given the competition for purchases that it anticipates especially in Lundazi where there is an established marketing system for sunflower.

Having the working capital available to pay producers on delivery is a major expense for scheme operators, especially if, unlike Lonrho, they have to borrow from domestic banks where interest rates are upwards of 50%. As the Managing Director at Cheetah Zambia commented, whilst he can source finance from external and donor sources for capital investment, access to working capital from abroad is much more difficult to find. His buyers in Europe will not pre-finance him as they only pay on delivery. He therefore either has to incur the additional expense of high cost local borrowing, or, if he pays producers only after he has sold the crop, risk losing the commodity to another buyer.

A further aspect of this problem is that the price offered by the scheme operator is usually given net of repayments. Thus another trader, who has not pre-financed inputs, is able to offer a price well in excess of this, encouraging the farmer, who may not be very clear about the value of the inputs or cost of the services he has received

from the scheme, to think that he is not being offered a fair price and is justified in selling elsewhere.

Lonrho attempts to get around this problem by offering a gross price. The cost of all inputs used by the farmer is then deducted. Though the average farmer is no better off under these arrangements, Lonrho management believes that the strategy has a psychological effect which reduces side sales.

Of course it should be noted that Lonrho's influence on prices restricts the amount of room for traders to vary these anyway. It also allows them to operate a price setting policy based on costs of production plus a margin for the farmer rather than one which is linked to the world price, which is highly volatile. In this way the company minimises the price variation for the farmer which it believes facilitates effective management. This same approach is favoured by IMPI Agriculture, though whether it will work in a much more competitive environment remains to be seen.

Farmer participation

Group mobilisation was discussed above in relation to monitoring systems. Groups, and their elected representatives, also provide a communication channel between farmers and the company's management.

In the Cotmark example, depot buyers are regularly in contact with group leaders and each month all the group leaders meet with the regional manager. IMPI Agriculture has encouraged its farmers to elect representatives to form a farmer committee in each of its two operational areas. These are in regular contact with the extension officers and meet with the company's manager every fortnight.

Consultation with farmers representatives was crucial for the Tobacco Development Company in Chipata, which manages an outgrower scheme of 400 outgrowers at Kapara, in finding a solution to the problem of tobacco purchasing. Rather than impose a system on the farmers, they discussed the problem with their representatives and an agreed approach was successfully implemented. At the other tobacco scheme visited in Serenje, farmers are not organised and there is no evidence of any consultation with their representatives. Management therefore has no means of listening to their concerns, a factor which may be contributing to the difficulty it is having in purchasing tobacco.

The Lonrho scheme does not make any provision for farmer representation. Though groups are used at the farm level to facilitate the dissemination of extension messages, they do not elect leaders to interact with management at a higher level. The extension system itself, and regular field days, do provide management with important links at the grassroots, but a more formalised system of farmer representation might provide management with an opportunity to keep its outgrowers informed as well as answer any concerns they might have. In March 1996 a number issues appeared to be of concern to farmers including the price for raw cotton offered by Lonrho (which in dollar terms was the same as the two previous years), the withdrawal of tractor services, difficulty in obtaining agrochemicals and the new policy of devolved management. Senior management was able to provide this researcher with reasonable

answers to all these concerns but, in the absence of a system of farmer representation, it may be difficult to communicate the same reassurance to the grassroots.

Access to other benefits

By offering them other benefits and services, scheme operators can increase the incentives for outgrowers to co-operate.

The strategy described by BIMZI's manager involves offering carefully selected farmers a package of services. The company claims that it is also a strategy to identify serious farmers with whom a working relationship based on mutual obligations and responsibilities can be developed over time. Outgrowers in the scheme are now receiving extension services in addition to input supply and marketing services, the company will supply farmers with bags and a sheller has been made available this season. In the future the company is considering assisting in crop storage by managing small storage facilities in rural areas for outgrowers.

The strategy is intensive in supervision and extension costs. To offset these costs the company will encourage outgrowers to diversify output next year, planting a legume (soya, cowpeas), an oil crop (sunflower, castor oil, sesame) and possibly paprika in addition to maize. Some of these crops are already grown in small quantities by farmers.

The Commonwealth Development Corporation (CDC) is considering using outgrowers to supply about 25% of the maize it will require to supply its new mill at Munkumpu Farms, a newly purchased estate which will grow 2,500 ha irrigated winter wheat combined with rain-fed maize and soya in the summer. Well aware of the risks involved in operating outgrower schemes, CDC is considering combining tight supervision with enhanced food security for its outgrowers: the mill will hold stocks of maize for sale to outgrowers at cost price if market prices rise sharply.

The Tobacco Development Corporation plans to take a slightly different approach. It is considering providing free storage facilities for outgrowers who want to store their own maize crop in order to take advantage of price rises later in the season. It will also prefinance a limited area of maize production. The tobacco scheme at Serenje presently does the same.

4. Constraints to the establishment of successful schemes: (2) Socio-economic issues

Field research indicated that a number of socio-economic issues are influencing the establishment of outgrower schemes. The most important is the Zambian smallholder's continuing prioritisation of maize production over other crops. To some extent this reflects the importance attached to food over cash crop production and is therefore consistent with patterns of smallholder behaviour elsewhere in Africa. But it is also the product of an agricultural system in Zambia which until recently promoted a policy of maize monoculture to the exclusion of not only cash crops but traditional food crops more adapted to certain agro-climatic zones. For example in

Eastern Zambia, groundnuts used to be a very important food and traded crop but in recent years production has collapsed.

With regard to outgrower arrangements, the high priority attached to maize production among smallholders has had two effects: (i) it has encouraged the diversion of fertiliser to maize, affecting yields; and (ii) it has reduced labour availability where labour requirements are in competition with maize. In both cases the net result has been to slow down the process of agricultural diversification.

The diversion of fertiliser to maize production was a problem facing almost all scheme operators. The General Manager of Cotmark who used to be a senior manager with LINTCO, commented that in one year when Lintco supplied smallholders with fertiliser, only 3 in 80 used it on the cotton crop. BIMZI estimates that in their first year of operation, 90% of the fertiliser supplied to outgrowers for sorghum production was used for maize.

As noted above, in the tobacco schemes in Chipata and Serenje managers are tackling the diversion problem by supplying fertiliser for household maize production as well as for tobacco. For cotton, as noted in Section Two, Lonrho has taken the opposite approach: rather than risk diversion, it does not supply any fertiliser at all. Similarly Advance Seed Company only supplies its sorghum and cowpea growers with seed as do several of the traders in the Kabwe area who are promoting sunflower. Southern Oils, which has been working with outgrowers for a number of years, does the same. The implication is that it is still financially viable for scheme operators to promote outgrower production in these commodities despite low yields i.e. the cost structures are such that they can support relatively extensive production systems involving many growers producing at low levels of efficiency. By contrast tobacco production has to be intensive to ensure an acceptable marketing quality and this requires significant quantities of fertiliser. Paprika is the same.

At the same time Lonrho has a number of strategies to mitigate the impact of lower yields resulting from low fertiliser use. It encourages farmers to do maize/cotton rotations to make use of residual fertiliser in the soil after a maize crop (of course this begs the question as to how the smallholder acquires fertiliser for maize production in the first place: government lending institutions and the SGS/Cavmont scheme may have played a role up until now, but to what extent these sources of assistance will be available in the future is an open question). The company also puts a lot of extension effort into weed control, given the significant negative impact of weeds on yields and it encourages women to grow small plots of cotton (about a quarter of a hectare) around the household compound as the yields from such plots tend to be much higher than average due to the intensity of crop management and higher soil fertility.

Unlike Lonrho, Lintco did supply fertiliser to growers for cotton but it also introduced soya in rotation with cotton to improve soil fertility. Cotmark, which employs a number of former Lintco staff, is keen to carry on promoting legume/cotton rotations both for its positive impact on cotton yields and because it believes that soya, which is a labour intensive commodity, has outgrower potential and good export markets in South Africa.

Clearly maize preference and its influence on fertiliser usage is having a significant impact on the design of schemes, although the nature of the impact varies with the type of commodity. Where yield advantages can either be offset with more extensive production or rotations that compensate to some degree for fertiliser use, scheme operators prefer not to supply fertiliser. However where intensive use of fertiliser is required, scheme operators have to provide additional fertiliser to guarantee that adequate levels reach the target commodity. In both cases it is likely that production efficiency is reduced which has implications for the successful development of a more diversified agricultural base in Zambia.

With regard to issues of labour allocation, a commodity which requires labour input at the same time as maize may not receive the optimum level of attention. For example late planting or insufficient weeding may reduce yields. Table I indicates that many of the crops currently being attempted on outgrower schemes follow similar cycles to maize and are relatively labour intensive. Cowpea offers advantages in that it is harvested in March, before the maize crop is ready and sorghum one established competes well against weeds, reducing the need for intensive weeding. On the other hand, cotton is highly labour intensive and, as Lonrho introduces minimum tillage on its schemes, will become even more so, given the increased weed problem. Soya is labour intensive at harvest.

Given that it is often women who are responsible for weeding and harvesting, the introduction of labour intensive commodities which compete with maize for labour is likely to impact more on the labour demands made on women than on men. More research is required to establish what the impact of this will be in the Zambian context, but experience elsewhere suggests that it might affect the efficient development of new production systems (Stringfellow, 1996). It is clear that those promoting outgrower schemes need to understand prevailing patterns of household labour allocation before making large investments in new production systems.

5. Conclusions

The evidence presented in Sections 3 and 4 suggests that the development of successful outgrower schemes in Zambia has required a flexible and often significant management input. The intensity of this input can be seen as a function of two sets of variables: the cropping or production characteristics of the commodity; and the marketing environment. A third set of variables relating to the socio-economic characteristics of the smallholder community itself have been shown to influence the design of management systems.

Within the set of cropping characteristics, factors which will increase the intensity of management input are high husbandry requirements and high purchased input requirements relative to output value. With regard to the marketing environment, factors are the degree to which the commodity is consumed, processed and traded locally as well as the degree to which marketing systems exist for extra-regional or export trade.

This analysis can be used to develop a very simple tool to assist pre-feasibility studies of proposed outgrower schemes. First of all, the aspiring investor should be able to provide sufficient information to answer the following yes/no questions about the marketing environment:

Table 2: Determining the “diversion rating”

Question	Yes (scores 1)	No (scores 0)
Is it edible?		
Is it processed locally for household/local use?		
Is it traded locally?		
Does the marketing infrastructure already exist for extra-regional or export trade?		
TOTAL SCORE		

The higher the score, the greater the likelihood of diversion of sales. This can be considered the “diversion rating”.

Next the ratio of costs (inputs and extension which the scheme operator proposes to prefinance) relative to the value of the expected yield needs to be calculated. This was attempted in Table 1 for commodities for which sufficient information was collected in Zambia. It can be considered the “exposure ratio”.

In Table 3 an attempt is made to bring together the diversion rating and exposure ratio for the commodities given in Table 1.⁵

Table 3: Diversion ratings and exposure ratios for selected commodities

	low diversion rating	medium diversion rating	high diversion rating
low exposure ratio	castor	cotton (without fertiliser)	sunflower and cowpea (without fertiliser)
high exposure ratio	paprika	cotton (with fertiliser) tobacco	hybrid maize sunflower, soya and cowpea (with fertiliser)

If a commodity comes out with a high “diversion likelihood” rating and a high ratio of prefinanced costs relative to the expected value of output (“exposure ratio”), it is unlikely to be a good investment. The cost of supervising such a scheme to minimise diversion to an acceptable level would be difficult to offset against the gross returns from the scheme. The SGS/Cavmont scheme illustrates the difficulty of achieving success under these conditions with hybrid maize.

⁵ It should be emphasised that in a dynamic situation these ratings (which should only provide a guide) can change quite rapidly. Furthermore, this analysis is only concerned with one aspect of a proposed investment, that is the extent to which commodity features might influence management systems and costs. There are other important issues that an investor should consider, not least the strength and reliability of the market for the commodity itself.

A scheme to produce a commodity which has a high diversion likelihood rating but a low exposure ratio has a better chance of success. The schemes developed for a number of food commodities by traders and processors fall into this category. As Table 1 indicates, by limiting his/her service simply to the supply of seed, a scheme operator can keep the risk exposure level below 10%. He/she will still need to invest in an efficient collection system at harvest to ensure sufficient volumes of the commodity are recovered to cover the initial investment, and this is likely to be even more the case as local marketing systems develop under liberalisation. On the other hand if the commodity is self-pollinated (as is the case with cowpeas and soya), as production becomes established in an area, farmers will be able to produce their own seed and their need for production support will be much less. Thus it is likely that the existence of outgrower schemes at the moment for these crops represents a transition strategy adopted by traders, necessitated by the poor availability of seed for new food crops after years of maize monoculture and the more recent droughts. In the longer term these arrangements may disappear.

Crops with a low diversion and exposure ratio should represent the most secure investment. At present castor appears to be the only commodity falling into this category in Zambia. It is not edible or widely traded and is a low cost, low management commodity. On the other hand, these features make it a commodity with low entry costs for investors and in a dynamic situation as more producers and traders emerge, marketing might become far more competitive. Thus though market leaders may initially do very well, competition may rapidly reduce profits.

Table 1 suggests that paprika is an example of a commodity with a low diversion rating but a relatively high exposure ratio. Although it is a high value commodity, an investor's prefinancing costs are driven by the commodity's high input and extension requirements, which are further increased by the fact that paprika is a new commodity in Zambia and therefore requires a greater extension effort. Given this, a potential investor would have to be in a position to take a long term view of his/her investment to offset initially high start up costs against income from future years. The high level of risk involved also requires the investor to safeguard the investment with effective management systems. As the evidence of field work presented in Section 3 demonstrates, an investor can use a number of complementary strategies to achieve this: (i) strict screening and monitoring of scheme participants (which may include peer group monitoring); (ii) risk sharing; (iii) consensus building.

Cotton and tobacco have much in common with paprika except that the risk of sales diversion is higher, given that they are established commodities in Zambia. Lonrho's management strategy for cotton has been to focus on strict monitoring and risk sharing, which it is attempting by passing on a higher proportion of production costs to the producer through the substitution of purchased inputs (which it would have to prefinance) for the smallholders' labour input.

This option does not exist for tobacco and paprika which require high fertiliser inputs. Developing an alternative approach is the main challenge facing those who want to work with outgrowers to produce labour and capital intensive commodities.

Institutional mechanisms are required which reinforce the mutual interest that the buyer and the smallholder have in co-operation. A consensual approach to management, elements of which are described in Section 3, is crucial (although this does not remove the need for careful screening and monitoring). In addition, an investor might find it well worth investing in improving the business understanding of smallholders or their representatives, allowing a more transparent dialogue about the business contract. Where this creates sufficient trust, smallholders might be induced to put up some of the capital required for production themselves, thus spreading the prefinancing risk between the two parties. It is worth noting that in Zambia, IMPI Agriculture, which has attached great importance to developing good working relationships with its growers and their elected representatives, is already considering asking its growers to contribute to a security fund.

In the long term, the importance of outgrower arrangements as an institution in Zambian agriculture will depend on the ability of investors to develop the kind of "business partnerships" sketched out above. Donors may be able to assist in this process by providing technical assistance and training for farmer organisations and by assisting in the design of financing systems which spread the prefinancing risk between the smallholder, investor and a financial institution. Venture capital funds may also assist new investors should the conservatism of the commercial banking system block new investments. In the short and medium term, outgrower schemes requiring a much lower commitment of resources by investors may continue to play an important role in promoting agricultural diversification in Zambia. However as the marketing infrastructure develops for these commodities - both for seed supply and for output marketing - the rationale for these schemes will disappear and traders and processors will be able to rely on open market procurement.

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Appendix One

Terms of Reference

1. To provide an overview of the state of smallholder outgrower schemes in Zambia.
2. To investigate the extent to which the diversion of sales by outgrowers is hindering the establishment of successful outgrower schemes in Zambia and the strategies adopted by entrepreneurs in response to this problem.
3. To investigate the degree to which socio-economic issues have influenced the outcome of schemes.
4. To identify ways of disseminating relevant research findings to interested parties in Zambia.

Appendix Two

List of those interviewed during the course of fieldwork

Dr George Gray, Executive Director, Zambian National Farmers Union, Taz House, ChaChaCha Road, P.O.Box 30395, Lusaka, Zambia

Mr Songowayo Zyambo, National Co-ordinator, Zambian National Farmers Union, Taz House, ChaChaCha Road, P.O.Box 30395, Lusaka, Zambia

Mr Andrew Fletcher, General Manager, Agricultural Commodity Exchange Ltd., Taz House, Chiparamba Road, P O Box 30395, Lusaka, Zambia

Mr David Soroko, Chief, Office of Agriculture, USAID, 351 Independence Avenue, Box 32481, Lusaka, Zambia

Mr Neil Molver, Managing Director, Lonrho Zambia Ltd., P O Box 322568, Lusaka, Zambia

Mr Ginty Melvill, General Manager, Lonrho Agribusiness, Cotton Division, Lonrho Zambia Ltd., P O Box 322568, Lusaka, Zambia

Mr Roy Mutelele, Zone Extension Manager, Mumbwa Cotton Ginnery Ltd, Lonrho Zambia Ltd., P O Box 830195, Mumbwa, Zambia

Dr Joyce Mulila, National Project Director, Integrated Crop Management/Crop Legumes Project, UNDP/GRZ/FAO,

Dr Frank Javaheri, Integrated Crop Management/Crop Legumes Project, UNDP/GRZ/FAO

Mr Dieter Fischer, Project Manager, Oilseed Processing Project, Africare, 87 Provident Street, off Great East Road near Makishi, P O Box 36658, Lusaka, Zambia

Mr T Constantinou, Southern Oil Mills Ltd., P O Box 32655, Lusaka, Zambia

Mrs Mulenga Maine, Whiterose Farm c/o ZNFU, Taz House, ChaChaCha Road, P.O.Box 30395, Lusaka, Zambia

Mr Aldert van der Vinne, Managing Director, Tobacco Association of Zambia, Plot 5055 Mungwi Road, P O Box 32617, Lusaka, Zambia

Mr Yakub Daya, Manager, Zambia and Overseas Tobacco Co. Ltd, P O Box 510454, Chipata, Zambia

Mr Robert Zulu, Accountant, Zambia and Overseas Tobacco Company Ltd., P O Box 510454, Chipata, Zambia

Mr Douglas Mwasi, Credit Supervisor, Agricultural Credit Management Programme, SGS Zambia Ltd,

Mrs. C. Mwanamwamba, Managing Director, BIMZI Ltd., P O Box 50514, Lusaka, Zambia

Mr Julius Mumba, Agricultural Manager, BIMZI Ltd., P O Box 50514, Lusaka, Zambia

Mr Ernest Mtamboh, Executive, Commonwealth Development Corporation, 74 Independence Avenue, P O Box 32000, Lusaka, Zambia

Mr Frank Joosten, Kabwe Smallholders Development Programme, Central Province, P O Box 8 11 10, Kabwe, Zambia

Mr Willis Simfukwe, Kabwe Smallholders Development Programme, Central Province, P O Box 8 11 10, Kabwe, Zambia

Mr Norman Chipakupaku, IMPI Agriculture Ltd

Mr Netson Simbaya, Advance Seed Company Ltd, c/o Amanita Zambiana, P O Box 33711, Lusaka, Zambia

Mr Stephen Humphrey, Chief Executive, Zambia Export Growers' Association, P O Box 31705, ZEGA Terminal, Airfreight Village, Lusaka International Airport, Lusaka, Zambia

Mr Mark Turken, Managing Director, Cheetah Zambia Ltd, P O Box 36666, 10101 Lusaka, Zambia

Mr Joe Nkole, Operations Manager, Cotmark Limited,

Mr Richard Tembo, Regional Manager, Cotmark Limited

Mrs Susan Kannyemba, Assistant Marketing Officer, Clark Cotton Zambia

Mr Jones A Mayovu, Manager, Barclays Bank, Katete, Eastern Province

Appendix Three

Questionnaire for Companies Operating Outgrower Schemes

1. Basic Data

- 1.1 What commodity is produced under outgrower arrangements?
- 1.2 What are the main activities in the outgrower operation?
- 1.3 How many farmers are participating in the scheme?
- 1.4 What is the typical profile of a scheme participant?
- 1.5 Does the company produce the commodity itself on a nucleus estate?
- 1.6 In general terms, why did the company choose to work with outgrowers?

2. Factors Influencing the Scheme's Design

2.1 Site selection

Why was the particular site selected for the scheme (farmers' experience with the crop; proximity to marketing infrastructure; natural resource base etc.)?

2.2 Commodity selection

Why was the particular commodity chosen (comparative advantage in cost of production; off season production provides market opportunity; local knowledge of the crop; non edible crop; no local demand for the crop; appropriate agronomic conditions)?

2.3 Farmer participation

What information was collected on the target participants during the design process? How was this done? (would labour be available at the required times; would it be provided by men or women? what would the opportunity costs be for farmers participating in the scheme; what impact would the new crop be likely to have on food production; to what degree would the existing farming system be able to withstand increased risk?)

3. The Management of Outgrowing Operations

3.1 Farmers

- 3.1.1 Are any selection criteria applied to prospective scheme participants?
- 3.1.2 Is there a monitoring system in operation on the scheme? If so, describe. What records are kept on each farmer?
- 3.1.3 Does the scheme provide extension services? How are these organised?
- 3.1.4 What communication channels exist between the scheme's management and the participating farmers? Are the farmers organised into groups or associations (by the company/through their own initiative?)
- 3.1.5 Describe the input delivery system. Are inputs supplied on credit? Does the company give credit for anything else? Is any security asked for loans? Is any kind of credit register in use?
- 3.1.6 Describe the purchasing system.
- 3.1.7 How and when are farmers paid?

- 3.1.8 How are loans recovered?
- 3.1.9 In addition to the opportunity to produce the target commodity itself, does the scheme offer any other benefits to participants?
- 3.1.10 Are written contracts in use?

3.2. Administrative/extension teams

- 3.2.1 How many administrative/extension personnel are employed by the company?
- 3.2.2 How are administrative/extension teams recruited? What qualifications/experience do they have?
- 3.2.3 How are they monitored?
- 3.2.4 What training is provided to extension agents/administrative personnel?
- 3.2.5 What communication systems exist between the company management and administrative/extension personnel?
- 3.2.6 What rewards systems are in operation for administrative/extension personnel?

4. Market Considerations

- 4.1 What market advantage does the commodity have?
- 4.2 How stable is the market? (does the company have a contract with a buyer? does the company monitor the performance of its buyer?)
- 4.3 What are the scheme's sources of market information? How did the company identify its present buyer? Does it know of any alternative buyers? Does the scheme collect information on competitors?
- 4.4 Does the company operate any kind of sensitivity analysis to model the impact of changes in key factors affecting its operations?

5. Indicators of Scheme Success

- 5.1 Has the scheme achieved its target output levels (in terms of quantity, quality and timeliness)
- 5.2 What are loan repayment levels by outgrowers?
- 5.3 Has the number of farmers participating in the scheme increased over time?
- 5.4 Does the company have plans to expand its operations? Has it received any loans recently for this purpose?

6. Problems

- 6.1 What have been the main problems encountered by the scheme? How have they been resolved?