FACILITATING SMALLHOLDER ACCESS TO WAREHOUSE RECEIPT SYSTEM IN ZAMBIA: REVIEW OF OPTIONS

REPORT PREPARED FOR THE

ZAMBIAN AGRICULTURAL COMMODITY AGENCY LTD.

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JANUARY 2002

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FACILITATING SMALLHOLDER ACCESS TO WR SYSTEM: WHICH SMALLHOLDER GROUP MODEL?

1. Introduction

A review of grain marketing by small farmers and various farmer group models in Zambia was recently undertaken by ZACA/NRI with the aim of identifying ways of assuring effective smallholder access to the warehouse receipt (WR) being developed in the country. Since May 2000, local stakeholders[1], under the umbrella of the Zambian Agricultural Commodity Agency Ltd. (ZACA), have been promoting a WR system (model described in Box 1) under a project implemented by Natural Resources Institute (NRI) and financed by the Common Fund for Commodities (CFC).

This report presents observations and recommendations from the review. It is by no means exhaustive, and further work is needed. It is also hoped that the recommendations regarding group models to adopt would be refined with experience. The report is set out as follows: the next section presents a very brief overview of maize marketing by small farmers in Zambia and discusses how the WR system will improve smallholder crop marketing. Section 3 outlines requirements for direct smallholder involvement; and the experience of various smallholder group models in the country is discussed in Section 4. Conclusions and recommendations are outlined in Section 5.

2. Small farmers and the maize market in Zambia

The maize market in Zambia is segmented with a less formal chain dominated by smallholder produce and relatively more formal channel through which commercial farmers market their produce. Small itinerant traders dominate the smallholder chain, which is characterised by the following weaknesses:

- It is very illiquid because the traders are under-capitalised, have little or no access to bank loans and tend to be refused suppliers' credit from producers due mainly to lack of trust. the traders are, however, often required to extend 14-21 day credit to millers.
- A substantial part of the marketable surplus of small farmers is sold early in harvest season, owing to their weak capacity to defer sale as a result of lack of efficient storage facilities and liquidity constraints. The over-supply of produce during the harvest season and illiquidity in the maize trade depress farmgate prices and widen trade margins, thereby reducing incentives to invest in productivity-enhancing inputs (Box 3).
- No formal quality standards are maintained within the trade and grain sampling is usually by sight and grading tends to be highly subjective. There is anecdotal evidence that smallholder produce is discounted at the mills because of uncertain quality.
- The cost of transacting is high - trade is usually by physical sampling; traders are known to spend 3-4 days assembling 30 tonne load due to lack of reliable information about available supplies from particular locations; and transport costs are high due to poor roads, and related to that, lack of required means of transport.

[1] List attached as Appendix 1.

The commercial sub-sector chain is shorter, more formal, and often involves deliveries against contracts - formal or verbal. Informal commodity standards apply within the trade, and parties are better informed about market prices, and are often able to transact using modern communication facilities e.g. telephones, thereby reducing transaction costs. Unlike smallholders, sale by commercial farmers is usually influenced by the price level. They are usually able to defer sale because they are better capitalised and have access to better storage facilities.

2.1 Existing grain marketing system does not favour smallholder production

The marketing strategy of smallholders is dictated more by the need for cash than by market price levels. They usually sell more than 50% of their marketable surplus during the immediate post-harvest period (June-August), when prices are very low. This is mainly because of limited access to credit for consumption smoothing in the rural economy. Furthermore, lack of trade finance makes the rural trade less liquid, thereby reducing the ability of small traders to absorb the substantial surplus during the harvest season.

Small farmers typically plant about 1.3 hectares of maize and the average yield for those not using inputs like fertiliser is about 1.5 tonnes per hectare, while a number of NGOs report that farmers in groups they work with record an average yield of 3.5 tonnes per hectare. The average cost of production is estimated at $62.00 per tonne of maize for smallholders (see Appendix 1) - this cost includes labour and fixed costs (like land rent).

The average producer price per tonne of maize in remote locations like in the Eastern Province was about $35 in July 2001, while in the Central and Lusaka Provinces, it was about $62.5 per tonne. Based on these figures, small farmers, especially those in remote locations, could have lost about $27.00 per tonne of maize sold during the harvest season. It should be noted that in the 2001 harvest Zambia had a short crop, so it is unlikely that farmers would get higher producer prices during normal harvest seasons.

Even if the production cost is adjusted to take account of the fact that the opportunity cost of rural labour is zero and that most small farmers use family land and, therefore, pay no land rent, farmers in remote locations (e.g. in the Eastern Province) still lose about $6.00 per tonne of maize sold in the harvest season[2]. Discussions in Box 3 also show that, by keeping producer prices low during the harvest season, the marketing system discourages small farmers from using fertiliser, except where (as noted by some authors), such inputs are distributed through government/donor credit programmes with implicit or explicit subsidies.

[2] The cost of production per hectare drops from $93 to $61 if labour cost and land rent are excluded. This implies the cost of producing one tonne of maize falls from $62 to $41, meaning farmers who sell at $35 per tonne during the harvest season are losing about $6 per tonne. See Appendix 1 for details of the production cost of maize for smallholders.

2.2 How smallholder grain marketing would benefit from WR system

The WR system is seen as an important means by which agricultural marketing can be improved, because it would ease access to finance, by making stored commodities acceptable collateral; and enable efficient "sight-unseen" trade (which does not entail physical sampling by traders) to develop. Without doubt, smallholders will benefit indirectly from the system, simply through its aggregate impact on commodity prices, especially during the harvest season, and on the transparency of price formation. The benefits to them, especially as members of marketing groups, from direct involvement include the following:

- Getting a better deal when selling their crops because: they can bulk up their produce and sell further down the marketing chain, for example to processors, millers and large traders. Their bargaining position would also be strengthened as a result of their ability to defer sale through access to inventory credit and access to market information (disseminated through ZACA's website and notices at the certified warehouses).
- They will be able to participate in modern agricultural commodity markets (both locally and within the sub-region) because they will be encouraged and trained to comply with commodity standards under the WR system.
- With storage occurring in well-run warehouses or silos, their post-harvest losses will be reduced, thereby increasing the income of farm households.
- Access to input credit will be enhanced as barter-type input credit operations will be more liquid (with immediate financing against inventories accumulated being possible) and therefore more attractive to commercial operators.
- Lending to small farmers will also be helped by WR system as it allows a database on their production to be developed and also enables them build a good track record with banks though obtaining finance secured with the receipts.

The experience of some developing countries indicates that there is considerable potential for direct involvement of smallholders in the WR system. In India, both small farmers and traders deposit crops with warehouses owned by the Central Warehousing and State Warehousing Corporations, even though seasonal price variability is low compared to most African countries. Smallholders have participated directly in a small scheme in Niger, which has allowed them access to inventory credit in the form of fertilizer. Smallholder coffee producers are likewise involved in some Latin American countries, for example in Guatemala. Notwithstanding these positive examples, it is important to avoid short-term fixes to the detriment of long-term viability.

Box 1: The ZACA warehouse receipts model

National system
ZACA is developing a national WR system, starting maize, wheat and soybeans and from locations along the line-of-rail, but later expanding to more remote areas and including other crops like cotton, coffee, sunflower, groundnuts and paprika as confidence in the system develops.

Robustly overseen public warehousing system
Warehouses certified by ZACA are required to be open to 'all-comers' on strictly first-come-first-served basis (i.e. operate as 'public warehouses'). They are required to meet and at all times comply with a regulatory regime that stipulates a low capital threshold (minimum networth required is 10% of the value of stocks an operator is capable of storing, and not lower than US $50,000) but strict oversight, including frequent unannounced visits by warehouse examiners.

Private sector driven
Certified warehouse operators are free to charge economic storage rates, which must be conspicuously displayed and applied on a non-discriminatory basis to all depositors. Commercial banks, rather than 'soft' credit lines provided by Government or donors, will be the main source of finance secured with WRs.

Electronic receipt system
ZACA has opted for an electronic receipt system based on the following advantages:
- lower cost because there is less manual handling and transporting of documentation;
- greater security;
- faster movement of information; and
- ready access to an audit trail of receipt activity, which can be crucial in resolving disputes.

Sustainability is an important objective
ZACA will ultimately depend on user fees and seeks to be self-sustainable within four years of its establishment. To achieve breakeven volumes within this time frame without charging prohibitive fees, the ZACA project has had to focus initially on commercial farmers, but is developing a sustainable mechanism to ensure smallholder participation in the system, in conjunction with organisations working with small farmer groups.

"Process" approach adopted in implementation
NRI adopted a process approach in implementing the WR project in Zambia. Rather than promote a blueprint, this approach involves bringing stakeholders together to devise and implement project strategies, enhancing their capacity to do this through provision of technical advice by NRI (including bringing in other experts when needed). This has proved particularly helpful in encouraging banks to accept the system.

2.3 Cost-benefit analysis for smallholder participation in WR system

The potential benefits of the WR system to smallholders is illustrated with the case of small maize farmers at Chief Mumbi (in Petauke District, the Eastern Province), described in Boxes 2 and 3. In Box 2, it is shown that small farmers could potentially increase household income by over 80% if they directly use the WR system in marketing their produce. This is possible because they are able to defer sale to take advantage of rising prices as they can obtain inventory credit to satisfy immediate consumption and other needs. The terms under which inventory credit is offered, as used in the analysis, are those that some commercial finance houses in Zambia are prepared to offer; and depending on the security of the WRs, these terms would not discriminate between farmers on the basis of size of operations.

It is also worth noting, in assessing the benefits of the system to smallholders, that the labour cost in cleaning, sorting and bagging maize (estimated at about $3.34 per tonne), could be additional household income as family labour is most likely to be used[3]. The into-warehouse cost of transport is very significant in determining the viability of the WR system to smallholders. It represents over 65% of the pre-deposit cost for the farmers. While it costs about $0.60 per tonne/kilometre to transport maize from Chief Mumbi to Petauke, the comparative cost between Petauke and Lusaka is about $0.05 per tonne/kilometre. There is scope for reducing this cost by improving rural road infrastructure and increased availability of rural transport.

The case described in Box 3 also demonstrates that the use of the WR system in crop marketing by smallholders would substantially improve farmers' incentives to use productivity-enhancing inputs like fertiliser. The profitability of fertiliser is determined using the *value-cost ratio*, which estimates the value of additional income attributable to the use of fertiliser as a ratio of its cost to the farmer. The rule of thumb is that a ratio of 2 indicates it is worthwhile for the farmer to use fertiliser.

In carrying out the analysis in Box 3, it was assumed that farmers apply fertiliser at the recommended rate of between 150-200 kg per hectare for maize and the market price is estimated at $16.20 per 50 kg. It is indicative from this case (Box 3) that economic incentives for small farmers to use non-subsidised fertiliser would be significantly improved with the adoption of a better marketing strategy that assures them better prices. The WR system makes this possible, by allowing them to sell directly to processors or to defer sale, taking advantage of rising commodity prices.

[3] This does not include the cost of bags used, which is estimated at $3.77 for one tonne of maize.

Box 2: Economics of maize warehousing for farmer at Chief Mumbi in the Petauke District (Eastern Province of Zambia)

Small maize farmers at Chief Mumbi typically plant about 1.3 hectares of maize and the average yield is about 1.5 tonnes per hectare. They market about half of the output, with more than 50% of the marketable surplus being sold during the harvest period (June/July) when prices are low; average price levels at relevant locations in 2001were:

		July	October
Lusaka	-	$100	$135
Petauke	-	$60	$80
Chief Mumbi	-	$35	$54

Household income for a farmer selling 0.975 tonnes (out of 1.95 tonnes produced) without the use of the WR system would be:

	July	October	Total
Tonnage sold	0.4875	0.4875	0.975
Price per tonne	$35	$54	
Gross income	$17.06	$26.33	**$43.39**

The impact on household income of using the WR system in marketing is shown below. It assumes farmers deposit the entire crop at Petauke and obtain inventory credit, at an advance rate of 70% and compound interest rate of 17% per annum and sell in October.

Bank advance (70% of estimated value of 0.975 tonnes at Petauke price)			= $40.95
Less: cleaning, sorting + bagging cost ($7.11 x 3.55)	= $6.93		
loading and off-loading cost ($0.50 x 0.975)	= 0.49		
transport to Petauke @ $15/tonne	= 14.63		
Leaving total cash income available in July			= $18.90

Additional income when crop is sold in October:			
Value at sale ($135 x 0.975 tonnes)			= $131.63
Less: advance received (0.975 x $60 x 70%)	= $40.95		
storage fees ($2.15/tonne x 0.975 x 3 mths)	= 6.29		
financing cost (0.17 x $40.95 x 0.25)	= 1.74		
transport to mill (@ $20/tonne)	= 19.50		
loading and off-loading cost ($0.50 x 0.975)	= 0.49		
broker's fees ($131.63 x 2%)	= 2.63		
sub-total			= $71.60
additional income			= $60.03

Total household income for the farmer would be **$78.93** (i.e. 82% more than income from alternative marketing strategy). Due to lack of accurate data on estimated on-farm storage losses, particularly among smallholders, storage losses have not been included in the analysis. Including it would raise incremental household income because the use of better storage facilities under the WR system would reduce storage losses.

Box 3: Warehouse receipts system and improved farm productivity

We examine here the hypothetical case of a farmer at Chief Mumbi who uses fertiliser provided on credit (and with no subsidy) and extension support from an NGO. The yield is estimated at 3.5 tonnes of maize per hectare. It is assumed that acreage planted and volume of output retained for household consumption remains the same as for farmers in Box 2 (i.e. 1.3 hectares and I tonne respectively). The marketable surplus of the households is 3.55 tonnes, and we assume the same price levels and marketing strategies as in the cases in Box 2 (storage is at Petauke).

Household income for farmer not using the WR system:

	July	October	Total
Tonnage sold	1.775	1.775	3.55
Price per tonne	$35	$54	
Gross income	$62.13	$95.85	**$157.98**

With sale using the WR system, total household cash income is estimated as follows:

Bank advance ($60 x 3.55 tonnes x 70%)			= $149.10
Less: cleaning, sorting + bagging cost ($7.11 x 3.55)	= $25.24		
loading and off-loading cost ($0.50 x 3.55)	= 1.78		
transport to Petauke @ $15/tonne	= 53.25		
available cash income			= $ 68.83

Additional income when crop is sold in October:

Value at sale ($135 x 3.55)		= $479.25	
Less: advance received	= $149.10		
storage fees ($2.15/tonne x 3.55 x 3 mths)	= 22.90		
financing cost (0.17 x $149.10 x 0.25)	= 6.34		
transport to mill (@ $20/tonne)	= 71.00		
loading and off-loading cost ($0.50 x 3.55)	= 1.78		
broker's fees ($479.25 x 2%)	= 9.59		
sub-total		= $260.71	
Additional household income			= $218.54

Total household income with use of WR system in marketing is **$287.37**.

Value-cost ratios (VCR) where:

	WR system not used	**WR system used**
Income with fertiliser application	$157.98	$287.37
Less income without fertiliser	$ 43.39	$ 43.39
Incremental income	$114.59	$243.99
Divided by cost of fertiliser applied	$ 64.80	$ 64.80
VCR	**1.77**	**3.76**

3. Pre-requisites for smallholder participation in warehouse receipt system

3.1 Rural infrastructure

Zambia has substantial storage capacity. Within the state sector, the Food Reserve Agency (FRA) has silos and warehouses with total capacity of over 900,000 tonnes. This includes small storage sheds that can store between 27-900 tonnes located in rural areas. The donor/government-supported Programme Against Malnutrition (PAM) also has over grain warehouses, with capacity ranging from 500 to 1,000 tonnes, in rural areas. However, most grain storage facilities in rural areas are unutilised, and many are reported to be in a state of disrepair and substantial investment would be required for remedial works.

Private grain storage activities are concentrated in urban locations, where millers and processors want to assure regular supply of raw materials, while large traders want to be as close as possible to the major buyers. Hence, in urban areas, there is spare capacity in the private storage sector, but new facilities continue to be constructed.

Rural road infrastructure is very poor, and contributes to high transport costs in many rural communities. While the cost of road transport from a rural to an urban area could be as high as $0.60 per tonne/kilometre (see Box 2), transport cost between urban locations with good roads is only $0.05 per tonne/kilometre for grains.

Access to banking facilities in rural areas is also very limited. The Zambia National Commercial Bank (ZANACO) has the widest bank branch network, but only 30% of its branches are accessible to rural communities, most of whose inhabitants have to travel distances of not less than 25 kilometres to the nearest branch. As a result, banks play a marginal role in the rural payments system and are unable to offer liquid and remunerative savings facilities to rural savers, thereby leading to rural savings often being held in non-liquid, non-earning assets, and deepening liquidity problems in the rural economy. Rural borrowers also have difficulty obtaining bank loans because of collateral requirements.

3.2 Bulking is essential to small farmer participation

Considering the cost of examination visits by ZACA (in terms direct travel and staff costs), a minimum of 3,350[4] tonnes of grains will be required to justify two visits per month to locations like Petauke. Storage capacity available in many rural locations, as indicated in 3.1 above, is well below this minimum and may be suitable only as assembly points for bulking crop for storage or sale. Furthermore, poor road infrastructure could make it very difficult for ZACA to effectively police operations in remote rural locations through frequent visits.

[4] A single trip will cost about $250, including the cost of fuel, subsistence for staff and the cost of staff time.

Where farmers deposit in facilities at urban locations, the direct handling costs incurred by warehouse operators is estimated at about $0.08 per tonne when deliveries are made in lots of 30 tonnes (i.e. one truck load). This cost rises to $0.25 per tonne if the lot size is 10 tonnes[5]. Warehouse operators certified by ZACA have therefore set the minimum lot size at 30 tonnes for grains to be receipted under the WR system.

With average marketable output of about 1 tonne, only small farmer groups that are able to bulk can store with the certified warehouses. For the farmers at Chief Mumbi, whose average marketable surplus is 0.975 (Box 2), group membership should be at least 31, while those with marketable output of 3.55 tonnes (Box 3) – resulting from increased yield due to application of fertiliser and improved husbandry practices – require only 10 members to get their crop receipted.

Experience suggests that group size matters in assuring cohesion and strong member control over the leadership, which contribute to transparency in the conduct of group transactions. Smaller groups are more cohesive, assure better information flow and members can exercise greater control over the leadership. The risk of fraud, which could undermine confidence in the WR system, will therefore be reduced. The implication is that it will be easier to get relatively more productive smallholders organised into marketing groups to access the WR system.

The next section reviews the experience from various group models in Zambia.

[5] Handling costs, which tend to be fixed, and total about $2.51 per delivery, include weighing fee (about $0.40 per truck), cost of documentation (including scale tickets, grading certificate, goods received note, accounting sheets), and estimated labour and management costs.

4. Smallholder group models in Zambia

4.1 The Farmer Distributor model – individual liability for group performance (developed by Dunavant (Zambia) Ltd.)

The farmer-distributor (FD) model was adopted by Dunavant (Zambia) Ltd., in support of its outgrower programme - to streamline input credit provision, including improving the rate of recovery, and technical support to small farmers. Dunavant is an international cotton merchant company that that entered the African market in April 2000 through their entry into the Zambian cotton industry (taking over the assets of Lonrho Zambia Ltd[6]. It inherited an outgrower programme under which Lonrho spent about US $3 million in providing extension and inputs on credit to over 88,000 farmers. The recovery rate for the credit component was just 53% in 1997/98.

The system

The model revolves around leaders of farmer groups. Called farmer-distributors (FD), the leaders are individuals identified by personnel of Dunavant and encouraged to apply to become representatives of the Company. To qualify, they must meet the following criteria: be cotton producers resident in a locality where the farmer group is to be formed; be of good reputation; be able to offer acceptable collateral (which include ploughs and livestock).

The FDs select members of their group and are responsible for their performance. This is in contrast to the approach adopted in most group formation initiatives, where external agencies (government or NGO) facilitates formation of groups and members elect leaders. The minimum size of the group is 20 members, and there is no maximum limit. Some groups have about 200 members, and average membership is around 50. On the average, members of the groups cultivate about 1.6 hectares of cotton, but they are also encouraged by the company to produce maize (for household food security) and legumes in rotation (for soil nitrogen fixation and as a dietary complement).

The FDs are trained by Dunavant extension staff and in turn train their members. In some provinces, e.g. the Eastern Province, the Dunavant groups are reported to have received extension and training from the SIDA-funded project - Economic Expansion in Outlying Areas. These are reported by Dunavant officials to out-perform the other groups. The activities of 5 to 7 FDs are co-ordinated by a Distributor Co-ordinator (DC), who acts as the link between FDs and the Company.

The functions, obligations and incentives for FDs are defined in formal contracts, which they execute with the Company. They distribute inputs on credit to their members and guarantee repayment by them. Repayment is often in the form of cotton supplied on the basis of a formula reflecting prevailing price levels, but cash and, sometimes, maize are

[6] Lonrho Cotton Zambia Ltd. bought out 3 ginneries belonging to the Lint Company of Zambia in 1996, making it the largest ginner in the country.

accepted. They are assisted in obtaining inputs from the Company and in arranging crop procurement from the farmers by the DCs, who also co-ordinate credit recoveries from the FDs and their farmers. The system covers 6 operational areas (Chipata, Choma, Kabwe, Lusaka, Monze and Mumbwa).

Repayment incentives

Within groups, the principle of joint and several liability operates. However, joint liability is not as important to the Company as are pressures upon FDs to secure repayment. The FDs who fail to achieve 50% recovery may not only be dropped from the programme, but could also face legal enforcement of the guarantee they provided to defaulting members. Performance is also rewarded, at two levels; the groups have access to additional inputs in subsequent seasons. For example, during the first season the group gets credit in the form of cotton seed and pesticides; Year 2 they get in addition, fertiliser, sprayers and bicycle loans. In Year 3 a performing group could buy a truck through a hire purchase scheme run by the Company.

The FDs also get directly rewarded for their achievement in loan recovery. They receive a commission based on meeting agreed milestones: for 60% recovery = 5% of the value of the credit repaid; 80% = 12% of the value of the credit repaid; and full (100%) recovery means the FD is entitled to 23% of the value of the credit to the group as commission.

Performance

The loan recovery rate improved from 53% in 1997/98 to 80% in 1999/00; and as at October 2000, more than 45% of the groups had recorded recoveries of 80-100% (15% of the groups achieved 100% credit recovery). It has been observed that groups which are close to ginneries have lower credit recovery rates, because of side-selling (with producers making direct into-mill deliveries).

Progress has also been made towards achieving the other objective of reducing the cost running the input-credit delivery and extension programme. Dunavant has reduced the staff involved in the programme from over 600 to 50 by October 2001.

Though the FD model is quite interesting, it is at this stage not possible to establish whether the system can be used in facilitating smallholder use of the WR system. To reach that conclusion, further work is needed to determine whether the groups produce significant marketable surplus of maize (and/or soybeans).

4.2 Funded group guarantee model – the Central Growers Association, Kabwe

The Central Growers Association (CGA) is a legally registered entity, which was formed in 1997 (as the Central Tobacco Growers Association) with the objective of promoting tobacco production and marketing. Its recent change in name is the result of a decision by the Association to diversify into production of other high value crops like cotton, paprika, soybeans and groundnuts. Most members cultivate maize in rotation with tobacco.

CGA is a representative body for member-clubs, which currently number about 35. The member-clubs have between 5 and 10 members, and their leaders, called Contact Farmers represent them at General Meetings of CGA. The General Meetings constitute the highest decision-making body of the Association, which is managed by a 7-member board. The membership of CGA stood at over 400 smallholders in 2000, but this was pruned down to 200 as part of a restructuring exercise to enable the Association take on additional responsibilities.

The smallholder members usually cultivate 2 hectares of tobacco in rotation with maize. Their average yield per hectare of maize is about 3.5 tonnes. The Association also has over 40 semi-commercial farmers, who cultivate between 40 and 100 hectares (also rotating tobacco with maize) and record yields of about 7 tonnes/hectare of maize.

The main buyer of tobacco from members of CGA is Zambia Leaf (a member of the Universal Leaf Group). Until recently, Zambia Leaf was responsible for extension, input distribution on credit and crop procurement. It has transferred the extension and input distribution functions to CGA, along with facilities like tobacco barns, grading sheds storage and office facilities (to be paid for over a period of 3 years).

Functions and responsibilities of CGA

In addition to negotiating prices on behalf of its members with Zambia leaf, CGA distributes inputs from Sasol, C.J. Woods and Agrid Zambia on credit to its members. The credit is guaranteed by the Association, and liabilities arising from default by members is made good through a temporary fund created from withholding 10% of sales revenues due each member. Where full loan recovery is achieved, members receive the amount withheld, otherwise they get paid less deductions to cover default losses. Thus, economic incentives for peer monitoring is not limited to exclusion of groups from further access to input credit, but also to loss of income. Loan repayment is estimated at about 80%, though a number of clubs are reported to have recorded 100% loan recovery.

The Norad-funded "Support for Farmers Associations Project" is assisting CGA with member training.

Lack of finance hampers CGA maize marketing initiative

In the 2000/01 season, CGA negotiated a supply contract with the National Milling Company to deliver maize in July 2001. It was estimated that about 10,000 tonnes of

maize could be assembled from small and semi-commercial members of the Association. Under the programme, the Association was to make an initial payment of about $110 per tonne to its members, and sell to National Milling for the equivalent of $137.5 per tonne. The members were later to be paid the difference between the gross margin (i.e. the into-mill price less the initial price paid), less operating and financing costs, as well as a service charge for the Association.

While its members would have obtained a higher price for their produce, the Association would also have earned additional income. The programme could, however, not be implemented because CGA could not secure finance for the initial payment. In Box 4, we shows that household income for smallholder-members of CGA could have been increased by 56% to 87% if the Association had succeeded in implementing the marketing programme. This is feasible with the WR system.

Box 4: Profitability of using WR system to market maize for small farmers in Kabwe District in July 2001

Producer price per tonne of maize in Kabwe District		= $62.5 to $75
Into-mill price per tonne (Lusaka deliver - offer by major miller)		= $137.5
CGA offer price to members (per tonne of maize)		= $110
Less into-warehouse costs:		
sorting, grading and bagging (@$7.11/tonne)	= $ 7.11	
transport @ $0.13/tonne/km x 50 km	= 6.25	
loading and off-loading	= 0.50	
	= $13.86	
Sub-total (representing initial payment received by members of CGA)		= **$96.14**

*This initial payment is 28% more than the maximum any small farmer would have received in the district; but they would also have received additional income when the sale was completed as shown below:

Gross margin for CGA (i.e. difference between sale price and advance payment made to farmers $137.5 - 110)		= $27.5
Less:		
grain handling and receipting cost	= $0.59	
storage charges (min. 1 month)	= 1.65	
Financing cost (assuming CGA repays after 1 month)	= 1.56	
Broker's fee for CGA (2% of into-mill price of $137.5)	= 2.75	
Sub-total	= $6.55	
Net margin (additional revenue due farmer)		= $20.95
Farmers' total revenue per tonne (initial offer price + net margin)		= **$117.09**

4.3 The joint liability group model

This model is quite common in Africa and sees groups as vehicles by which extension information can be delivered cost-effectively and small farmers can obtain credit in the form of inputs or cash, with repayment being assured through peer pressure. The model has been used by a number of NGOs, including the Co-operative League of the USA (CLUSA), Care International, World Vision and projects like the SIDA-funded Economic Expansion in Outlying Areas (EEOA), which is promoting diversification and enterprise among smallholders in the outlying provinces of Zambia. The approach adopted is typified by the CLUSA model in Box 4.

Box 5: CLUSA's Rural Grower Business Project (RGBP) in Zambia

CLUSA has been operating in Zambia for over 5 years providing inputs and helping in produce marketing through RGBs, which are linked to a network of over 90 depots. It has over 600 Rural Grower Businesses (RGB) with about 8900 members. The key objective is to help farmers diversify into cash crop production, but the participating farmers are encouraged to produce maize, to assure household food security.

CLUSA provides training and extension support to the RGBs and credit in the form inputs. Loan repayment is in kind. Yield from participating members is estimated at around 3.5 tonnes per hectare of maize (more than double the national average). CLUSA uses the RGBs and depots to encourage bulk distribution of inputs to farmers, thereby reducing the cost of input supply. It also negotiates marketing contracts on behalf of the groups, thereby making it possible for agribusiness, including millers in Lusaka, to procure smallholder crop at producer prices that are *fair and motivating* by encouraging groups of farmers to consolidate their produce.

Loan recovery, however, remains problematic.

This group model is also used by the Food Reserve Agency (FRA) in the Government's fertiliser distribution programme. Under the programme, commercial distributors are contracted by FRA to distribute fertiliser to farmer groups identified by MAFF. The distribution companies also recover input credits from participating farmers. The problems with this programme include delayed delivery of fertiliser and a very poor loan repayment record, which is partly due to the perception that inputs received may be some form of "political rent". This same perception may be undermining recovery performance of other barter-type input credit programmes run by NGOs and traders.

5. Lessons and recommendations

5.1 Lessons from review

The discussions above show that:

a. Small farmers in Zambia, particularly those in remote locations, are not adequately rewarded for their investment in maize production mainly because most of them sell over half of their marketable output in the immediate post-harvest period when prices are very low. The existing marketing arrangements also tend to discourage small farmers from using non-subsidised inputs, including fertiliser.

b. Lack of efficient storage facilities and credit for consumption-smoothing contributes to the inability of smallholders to adopt a marketing strategy that is driven by price levels rather than household need for cash. They are also unable to sell down the marketing chain to millers and other large traders, because of quality uncertainty and scale limitations, which also weakens their bargaining position.

c. The smallholder maize trade is largely cash-based and very illiquid, as a result of which the small traders, who dominate it are unable to absorb the large surplus output on the market in the immediate post-harvest period, contributing to the collapse of producer prices. This problem is due in part to the difficulty small traders have in accessing formal credit and the non-availability of trade credit from farmers because of experience with defaulting "cowboy" traders.

d. It has been shown that smallholders would benefit financially by using the WR system to facilitate direct sale to millers (as discussed in Box 4), or through deferred sale (as in Boxes 2 and 3).

e. The case described in Box 3, further shows that the WR system would improve small farmers' incentive to use productivity-enhancing inputs (e.g. fertiliser). By raising the size of marketable surplus produced by smallholders, the use of such inputs makes entry of small farmers into the WR system easier as relatively small groups would be able to bulk economic volumes for depositing under the system. There is, therefore, a synergy, that needs to be strengthened, in interlinking input credit delivery to produce marketing under the WR system for small farmers.

f. In addition to providing inventory finance, banks can potentially contribute to improving grain marketing in Zambia by facilitating payments to farmer-groups. By providing payments facilities to small farmers, banks can improve loan recovery through direct debiting of individual accounts.

g. Formation of marketing groups by smallholder will help them take advantage of the system because the groups are able to:

- provide a cost-effective forum for disseminating information on the system and for training in grain quality standards to avoid deposits being rejected;
- assemble economic size volumes of produce on behalf of members;
- screen and monitor performance by members, especially in minimising side-selling which could lead to high rates default where input credit has been provided.

h. The experience of both the Dunavant and CGA models confirms earlier findings (by Stringfellow et al., 1996[7]) that, high value crops with few buyers offer good opportunities for developing effective marketing groups. Their experience also shows that procurement networks for other commodities, including maize, could be developed around the marketing channels for the high value commodities.

i. Social peer pressure and exclusion from access to services and credit would not be sufficient in assuring performance by groups. The case of CGA shows that peer monitoring can be made more effective using economic incentives like funded group credit guarantees; where non-voluntary contributions (10% of sales revenue due individual members) are withheld until all members have repaid loans.

j. The Dunavant model also shows that farmer entrepreneurs (farmer-distributors) can be effective service providers for groups of small farmers; and could potentially link smallholder groups into the WR system. How this link would be developed needs to be investigated.

k. A representative organisation that would negotiate sales contracts on behalf of farmer groups would be helpful in enabling them take advantage of the marketing and other opportunities associated with the development of the WR system. Such a body, e.g. the CGA, could play an important role either in arranging inventory finance for groups or securing finance for procurement from members. It could also arrange bulk delivery of inputs on credit and facilitate extension and training, where support to intensify production is linked to the marketing arrangements being developed.

5.2 Recommendations

Based on the lessons above, it is proposed that:

1. The programme to involve smallholders in the WR system should focus at the initial stages on their use of the system to facilitate integration into the more formal grain market, presently dominated by the commercial farmers. Most groups will be unable to absorb or manage price shocks and, therefore, speculation at the group level should be minimised.

2. Farmer-marketing groups should be linked to certified warehouse operators.

[7] Stringfellow R. (1996) "Smallholder outgrower schemes in Zambia", NRI, August, 1996 (Report No. A0439)

3. Intermediaries should be encouraged to provide the link between smallholders, warehouse operators and buyers. These could be farmer-controlled organisations like the CGA, or an NGO working with small farmer groups (e.g. CLUSA). FDs could also bulk and market produce on behalf of groups, particularly those receiving input-credit, where the groups produce economic marketable surpluses.

4. Traders marketing smallholder crop, particularly those providing input credit, could similarly use the system, aiming for increased volumes rather than higher margins; this being possible because of improved liquidity in their operations as a result of securing WRs finance.

5. During the 2002/03 marketing season, it is specifically proposed that ZACA pilots a programme involving one farmer-controlled organisation (the CGA); and an NGO intermediary. A trader handling smallholder produce should also be identified and linked to a certified warehouse operator.

6. Promotional activities should be undertaken among farmer groups to be involved in the pilot by March 2002, and arrangements made to train facilitators of groups, who will later train group members, especially in quality and quantity assurance. Specific steps should also be taken to ensure that the participating farmer groups and their representative organisations are linked to certified warehouse operators and lenders.

7. Close monitoring will be necessary, to quickly address teething problems and outline lessons for replication.

APPENDIX 1:
SMALLHOLDERS' COST OF PRODUCTION OF MAIZE IN ZAMBIA
(Per hectare of maize)[8]

Fixed costs:

Land rent	= $10.00
Hand tools	= $ 5.00
Overheads	= $10.00
Sub-total	**= $25.00**

Variable cost without application of fertiliser:

Seed @ $1.20/kg (where 25kg is required per hectare)	= $30.00
Labour (at flat rate cost)	= $22.00
Grain bags for packaging	= $ 6.00
Council levy	= $ 5.00
Other expenses	= $ 5.00
Sub-total	**= $68.00**

Total cost of production per hectare, without fertiliser, is estimated at **$93.00**. With yield estimated at 1.5 tonnes/ha, the cost of production per tonne would be about **$62.00**.

[8] Data used is from the Draft Report on the Joint Study on Agriculture Sector Competitiveness and Impact of COMESA Free Trade Area for the Agricultural Consultative Forum (ACF), December 2001.