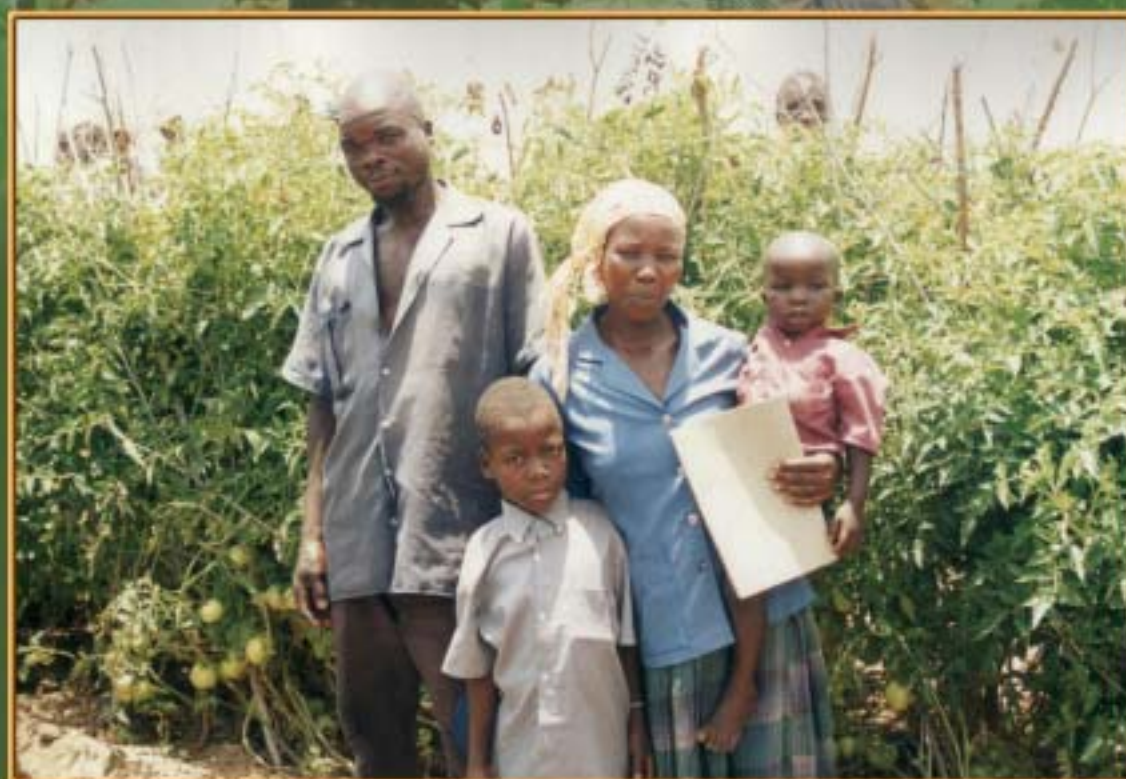


# Guidelines for Agricultural Relief Programs in Zimbabwe



International Crops Research Institute for the Semi-Arid Tropics



**DFID** Department for  
International  
Development



Rohrbach D, Charters R, and Nyagweta J. 2004. Guidelines for emergency relief projects in Zimbabwe: seed and fertilizer relief. PO Box 776, Bulawayo, Zimbabwe: ICRISAT; and Rome, Italy: FAO. 68 pp.

Drought is endemic to southern Africa. Floods are common. In response to these disasters, agricultural inputs such as seed and fertilizer are distributed to one or another affected community virtually every year. Yet these relief programs are generally defined anew each year, and lessons gained from previous experience are lost. Following the 2002/03 drought in Zimbabwe, the need was felt for a set of guidelines to help NGOs and government agencies better plan relief interventions, and provide advice on strategies to help households and communities re-establish and strengthen their farming operations. The guidelines were drafted by a voluntary committee of NGOs and international institutes.

This publication summarizes current advice on the design and implementation of agricultural relief programs in Zimbabwe. It covers various aspects – geographical and household targeting, what inputs should be provided, procurement and distribution methods, and monitoring and evaluation systems. The Guidelines primarily deal with the provision of crop inputs and technical advice, but livestock assistance is also discussed. They are written specifically for Zimbabwe, but much of the advice is relevant to neighboring countries, and thus suitable for broad application.

These Guidelines will continue to evolve and expand over the next few years, with improved advice on input packages, additional information on micro-irrigation systems and nutrition gardens, and suggestions for specialized assistance to households affected by HIV/AIDS. Readers are therefore encouraged to provide the authors with feedback for improving these Guidelines: corrections, lessons drawn ongoing relief programs, and suggestions of additional advice.

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# Guidelines for Agricultural Relief Programs in Zimbabwe

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2004

## Acknowledgments

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This publication was funded by the European Commission's Humanitarian Aid Office (ECHO) and the Department for International Development (DFID), UK.

The Guidelines are the product of collaborative efforts involving many parties. They were initially proposed by the Agriculture Coordinating Committee for Zimbabwe, an ad hoc grouping of NGOs, donors, government staff, and others, organized to share planning and experience relating to agricultural relief and recovery programs in the country. The Committee meetings have been coordinated by the FAO Emergency Coordinator for Zimbabwe. A voluntary sub-committee was established to draft the Guidelines. The three authors of this report played the most substantive role in drafting. However, strong input was also provided by various committee members including: K Furany (CARE), S Huddle (World Vision), M Jenrich (FAO), N Kutukwa (CARE), M Mudiwa (FAO), T Mupetsi (FACHIG Trust), L Mutiso (Oxfam), M Murata (CRS), and H Sittig (Help).



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# 1. Guidelines for Emergency Relief Projects in Zimbabwe: Seed and Fertilizer Relief

During the 2002/03 and 2003/04 planting seasons, free seed and fertilizer were widely distributed in Zimbabwe in response to drought and a general economic decline. This distribution was necessitated by the reduction in household seed stocks caused by poor harvests. Production losses have been exacerbated by a sharp decline in economic growth, and limited availability and high retail price of food grains. As a result, household and community seed stocks are more likely to be consumed.

Zimbabwe's recent problems have been severe but not unique, or even uncommon. Input relief has been distributed in this country during 7 of the past 12 years. Similar programs have been periodically launched in virtually every neighboring country. The distribution of seed through relief and recovery programs has become so common that several smaller seed companies have emerged to service this market. Larger seed companies maintain at least some stocks of a range of food crops to respond to this demand.

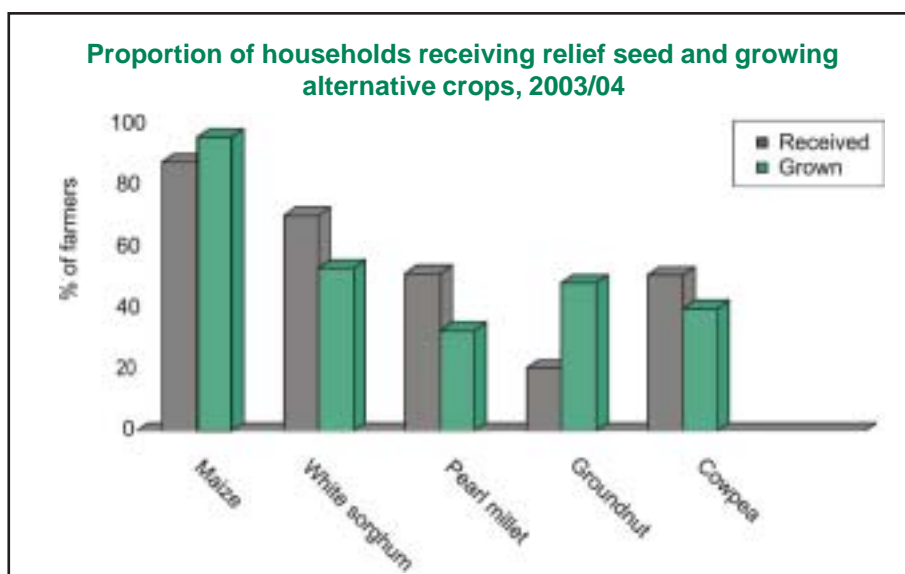
The substantial investment in input distribution programs naturally leads to questions about their efficiency. In late 2002, the Food and Agriculture Organization of the United Nations (FAO) began sponsoring monthly meetings of governmental and non-governmental organizations (NGOs) providing input relief in Zimbabwe in order to improve coordination. These meetings initially involved NGOs linked with FAO programs, but eventually

included most of the major NGOs involved in input distribution in the country.

The meetings of the informal FAO/NGO Agricultural Recovery Coordination Committee, involving major donors, international organizations and other stakeholders, encouraged the sharing of experiences and stimulated the joint assessment of possible solutions to common problems.

Distribution of seed, fertilizer, and related agricultural inputs has undoubtedly helped smallholder agriculture recover after the past two seasons of drought. However, many questions have been raised about program strategies and impacts. It is generally acknowledged that the effectiveness of assistance would be improved by better information flow – for example avoiding duplication or overlapping coverage of areas.

Related questions have been raised about how best to target farm households. Should inputs be given to the poorest and most food insecure, or to 'more serious' or 'better' farmers more likely to achieve production gains and thus improve food security in the community? Can targeting be more efficient?



*Relief programs in Zimbabwe have expanded rapidly in recent years, providing food, seed, fertilizer and other assistance*

Should farmers in drought prone regions be given maize seed? Is there a 'best' package of inputs for each agro-ecological zone? What indicators should be included in impact monitoring?

In late 2003, the FAO/NGO Agricultural Recovery Coordination Committee endorsed the drafting of a set of guidelines to provide advice to government and NGOs about how best to assist farmers in need of relief. Several members of the Committee volunteered to help draft these guidelines based on their diverse experiences. ICRISAT agreed to help coordinate the preparation of the guidelines. In the initial draft, six NGOs – CARE, Catholic Relief Services, GOAL, Oxfam (UK), FACHIG, and World Vision – contributed brief descriptions of what they considered best practices. This draft has been rewritten to provide a more consistent description of program options, as well as suggestions for best practice. Examples of the practices of specific NGOs are included.

This publication primarily considers issues relating to seed and fertilizer delivery in post-drought recovery programs in Zimbabwe. However, the Committee has agreed that this should be extended to a wider range of best practices relating to agricultural relief and recovery. These include options for tillage support, crop management advice,

water management, livestock systems management, and linking farmers to commercial markets for agricultural products. Therefore, these guidelines should be viewed as a work in progress.

The guidelines focus on programs with a 6 to 12 month lifespan, targeting relief and recovery after drought, as well as chronic crises such as HIV/AIDS and the declining economy. However, most of this advice can also inform program planning in areas affected by flooding. An effort is made to highlight problems relating to input delivery to households severely affected by HIV/AIDS. However, much more analysis is required of the needs and capabilities of such households. This document represents our views of current best practice. This advice is expected to evolve with time.

Finally, we note one persistent problem encountered during the drafting. We are trying to provide simple advice to guide the development and implementation of relief and recovery programs. Yet opinions differ about what constitutes best practice. Programs are changing as more experience is gained with alternative methodologies. Therefore, these guidelines provide specific sets of advice as well as a discussion of program options, which could help users modify the advice to better suit a particular situation. More detail is provided in a series of appendices.



## 2. Rationale for Emergency Assistance in Zimbabwe

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The primary aim of agricultural relief and recovery programs is to improve the food security of vulnerable<sup>1</sup> farm households. In particular, these programs aim to strengthen the capacity of these farmers to produce their own food supplies; and thus expand and stabilize food supplies at community level.

Several reasons have been commonly cited to justify the need for agricultural assistance during the past two years.

These include:

- Poor rainfall leading to widespread shortfalls in food production relative to household and community needs
- Shortages of basic foodstuffs on the retail market, increasing the probability that farmers will consume some of their seed supplies
- The sharp decline in economic growth, reducing remittance income and off-farm employment
- Shortages and consequent high prices of agricultural inputs on the retail market
- The high incidence of HIV/AIDS resulting in labor shortages, capital losses and a larger proportion of child-headed households.

*Short-term relief and longer-term development interventions often target different types of households. Many donor portfolios clearly differentiate between relief and development; and fund one type of activity rather than the other.*

In effect, the impacts of drought have been considerably worsened by problems in the larger agro-economy. It is likely that relief programs will still be needed even after more favorable rains return. A significant proportion of farm households will remain food-deficient and in need of assistance, perhaps for several years more.

The severity of these problems has led many NGOs to include both food aid and input supply in their relief programs. These include distribution of food aid (commonly maize, oil, and a legume), school feeding programs, under-five feeding and food for work. Most

NGOs distribute seed to help farmers re-establish their fields and expand their plantings. Some NGOs distribute fertilizer, micro-irrigation kits and tillage support, and also provide crop management. A few are involved with the rehabilitation of irrigation schemes, boreholes, dams and rural roads.

In many cases, relief programs are an extension of development activities previously being implemented by the NGO community. Some of these development activities remain in place. For example, CARE continues to build the capacities of rural retailers and rural micro-finance groups through whom they distribute input aid. ITDG has used food aid to encourage farmers to establish contours to improve water infiltration into crop lands. FAO has linked its emergency program to its farmer field schools and livestock forage production initiatives.

Opinions differ about the degree to which relief programs should also have development objectives. Some argue that objectives to improve the food security of vulnerable households should not be confused with development initiatives that may favor households with better resources. Others argue that relief programs ought to have longer term development impacts. These distinctions are reinforced by the fact that many donor portfolios tend to clearly differentiate between humanitarian relief programs and development programs. In Zimbabwe, programs funded by ECHO or USAID/OFDA target relief impacts only; while DFID funding generally targets relief with longer term impacts. However, these agendas may change over time.

Relief programs must be judged in terms of their impact indicators. The success of relief seed distribution is generally judged in terms of the expansion of cropped area and

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1. See Chapter 4 for a broad definition of vulnerability

production. Seed is distributed to farmers believed to have little or no seed stocks. If this seed was not distributed, food crops would be planted over a smaller area, and food insecurity would persist.

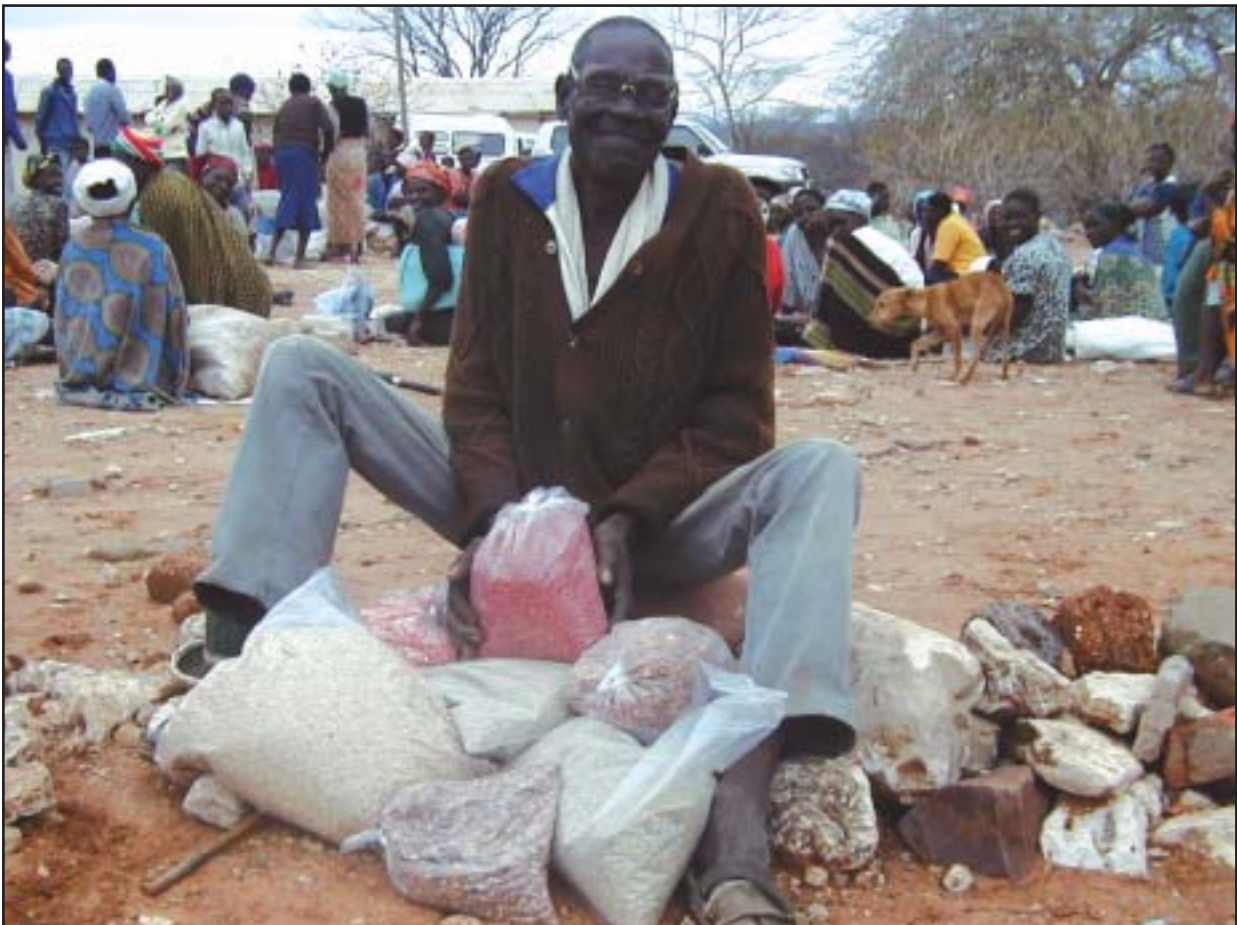
Similarly, the delivery of fertilizer is assessed in terms of the additional grain produced. Food-insecure farmers receiving seed and fertilizer should generally be able to harvest a larger crop than farmers who do not receive these inputs.

Some programs also assess a range of secondary indicators. Most relate to the logistics of delivery – whether all seed is accounted for, the timeliness of delivery, the number of recipients, satisfaction with quality and quantity, and the proportion of seed planted.

Such indicators correspond with the short term output of these relief efforts. Thus far,

few efforts are made to measure broader development impacts such as contribution to household and community food supply, contribution to household income, success of technology adoption, increased efficiency of crop production, or improvements in institutional arrangements for input marketing or agricultural relief.

The objectives of relief and development cannot always be strictly distinguished, but relief programs can impact on development. Where possible, relief objectives should be pursued with positive development impacts. At a minimum, development impacts should be neutral. But relief programs should ensure they avoid deleterious impacts. For example, relief distribution of seed and fertilizer should not undermine the development of seed and input markets. Where possible, these programs should support the development of such markets.



*Input distribution programs provide short term relief – but do not always contribute to long term development*

### 3. Institutional Arrangements

For a relief program to be successful, the implementing agency, such as an international organization or an NGO, must establish linkages with public agencies and private sector organizations. This chapter reviews several of the key linkages.

#### National Ministries

The Ministry of Labor and Social Welfare is responsible for declaring the need for relief, and then coordinating assistance to needy communities. The Ministry of Agriculture and Rural Development is responsible for district, provincial and national crop production estimates. These are collected on a fortnightly basis. This ministry houses the Department of Agricultural Research and Extension Services (AREX) which is responsible for research and extension advice.

The Ministry of Transport and Energy houses the Department of Meteorological Services which maintains national rainfall records, tracks incidences of flooding and drought, and issues a weekly rainfall bulletin. All IOs/NGOs involved in relief programs are encouraged to maintain communication with such government ministries.

#### Local Government Authorities

Liaison is essential with local administrative officials, though the exact nature of these arrangements will differ in each Province. In most cases, permissions and coordination are needed with provincial and district administrative staff. Traditional leadership structures may also need to be consulted.

Each Province is divided into districts. Districts are divided into wards. Each

ward falls under the responsibility of an elected councilor. In general, local level permissions must be sought from the councilor. This may be done first through the District Development Committee, which comprises the government-appointed District Administrator plus all councilors in the district. Zimbabwe has 10 provinces (2 urban, 8 rural) and 83 districts (14 urban, 69 rural), each of which contains 15-30 wards.

A ward consists of several villages, each led by a headman; the position is generally hereditary. The village headman (or kraal head, in some areas) is responsible for allocating village land and resolving local level disputes. He generally maintains village lists and is responsible for identifying households in need. The headman's permission must be sought before entering a village community.

Once again, there is no single set of procedures, throughout the country, for community entry. The important thing is to respect the existence and concerns of local authorities; and good relations depend as much on good communication as on protocol.



*The provinces of Zimbabwe; districts shown but not labeled*

## Agricultural Research and Extension Services (AREX)

Agricultural research and extension in Zimbabwe is coordinated by a single government department called the Agricultural Research and Extension Services. The national research service is the primary source of information about cropping technologies, and the primary source of new seed varieties for crops other than maize. The extension service develops and disseminates crop management recommendations. These are summarized in the Farm Management Handbook<sup>1</sup> as generic 'blanket' recommendations for the country as a whole. However, these recommendations tend to be adapted, on a somewhat *ad hoc* basis, by provincial and district level extension authorities. Each ward is supposed to have an extension officer.

The extension service is also the primary source of crop production estimates. Ward level extension workers prepare fortnightly reports containing estimates of area, production, and crop condition. These are collated at district, province and national levels. Each year, the estimates are reviewed, and possibly amended, by a national Crop Forecasting Committee. This Committee then announces a First Official Crop Forecast, usually in February, and a Second Official Crop Forecast, usually in April. The second forecast is generally the final official estimate for the season.

In general, NGOs operating in rural areas benefit from support of local extension staff. At a minimum, it is a courtesy to inform local extension staff while entering a community. District and ward level extension staff can also provide valuable information about the local agro-ecology, crops commonly grown,

and crop management practices. Extension staff may also provide assistance with training farmers about new varieties, and help run demonstration trials to promote good management practices.

## International Agricultural Research Centers

Zimbabwe hosts several programs of the international centers of the Consultative Group for International Agricultural Research (CGIAR). These are valuable sources of technical advice about crop varieties, crop

management and Zimbabwean agriculture. ICRISAT maintains a significant program at the Matopos Research Station situated 26 km south of Bulawayo. It holds a global mandate for sorghum, pearl millet, groundnut, chickpea and pigeonpea research, and thus offers an excellent source of information about these crops.

*Seed companies focus on hybrid maize, cotton and other commercial crops. They produce only small quantities of traditional food crops (eg sorghum, cowpea) because they believe commercial demand is limited and highly variable, depending on relief requirements.*

CIMMYT has a global mandate for wheat and maize research, and maintains a maize program at the University of Zimbabwe research farm approximately 15 km north of Harare. ICRAF maintains a program of agro-forestry research while CIFOR works more directly on forestry issues. The relevant contact addresses for these institutions are listed in **Appendix 1**.

## Seed Companies

More than ten seed companies operate in Zimbabwe. Many of them also service neighboring countries. The Seed Company of Zimbabwe (SeedCo) accounts for more than half of all sales in the country. Other large companies include PANNAR, Pioneer, Monsanto, National Tested Seed, and Prime Seed (see **Appendix 1**). These companies are the main source of certified seed in the

1. AGRITEX 2003. Farm management handbook, 4th ed. Harare, Zimbabwe : Department of Agricultural Technical Extension Services (AGRITEX).

country. They will also import seed stocks if they are not available locally, mostly from neighboring countries – particularly Zambia, Botswana and South Africa. However, occasionally, seed has been imported from as far away as India and Egypt.

The main problem with the seed industry is that seed stocks (except for maize) are low. Seed companies are reluctant to produce significant quantities of crops such as sorghum, pearl millet, groundnut and cowpea because they believe commercial demand is limited. They do not want to be left with large stocks in the event that relief and development programs in Zimbabwe and neighboring countries cut down on purchases. This problem is magnified by the fact that the ultimate level of seed stocks may not be known until several months after the preceding season's harvest. The seed companies contract farmers to produce their seed, but they remain uncertain about the level of deliveries for several months.

NGOs also need to be aware that a common way to resolve seed supply deficits is to purchase grain from local markets and clean it to seed specification – essentially for physical purity and germination. This helps ensure that farmers receive varieties that are adapted to local conditions; but the seed is often genetically mixed – Common Grade seed, in industry parlance. Chapter 6 provides more information on these issues.

## Fertilizer Companies

Zimbabwe currently has five major chemical fertilizer companies (see **Appendix 1**). Three are licensed for commercial sale through the wholesale and retail trade – Zimbabwe Fertilizer Corporation (ZFC), Windmill and Omnia. The other two are licensed to produce fertilizer – Sable Chemicals and Zimphos. During the past two years, the operations of these companies have been severely restricted by the country's foreign exchange shortages. Zimbabwe produces its own phosphorus, but must import all its ingredients for nitrogen, as well as most minor nutrients.

Sable Chemicals is the only producer of nitrogen in the country. In 2003, the company stated it would give priority to buyers able to provide foreign exchange for the import of ammonia from South Africa.

## Other Sources of Information

In 2002, Zimbabwe established a national Vulnerability Assessment Committee (VAC) – a subcommittee of the Social Services Cabinet Action Committee, in turn composed of a consortium of government, NGO and UN agencies. The VAC coordinates assessments of the level and scope of the emergency at the national level. A series of national surveys were conducted to assess agricultural production, nutrition, and rural and urban poverty. In March 2003 the VAC issued a major report on food insecurity in rural areas. A similar report was completed for urban areas.

The Famine Early Warning Network (FEWSNET) is a good source of information on agricultural conditions and food security in the country. FEWSNET issues periodic reports estimating production levels, food supply levels, nutritional indicators, and the status of agricultural production.

The Surveyor General's office offers a good source of maps including detailed maps of rural districts – though village demarcations on these maps are not always accurate. This office also sells aerial photos of various levels of resolution for much of the country – though, for any given area, these are likely to be several years old.

The Central Statistical Office sells periodic reports summarizing agriculture in the country, national accounts and economic statistics, and inflation estimates. These reports are generally available at the Government Publications office.

The Meteorological Service currently provides a weekly report summarizing national weather conditions including more detailed data for a small cross-section of areas. This is available for a small subscription fee.

## **FAO**

The FAO is taking the lead in coordinating humanitarian interventions in the agricultural sector, through monthly stakeholder meetings and a series of sub-working groups. The meetings involve organizations directly involved in relief work, donors, and other stakeholders participating directly and indirectly. Information about these meetings may be obtained through FAO's Emergency Coordination Unit for Zimbabwe. FAO also

has a database of agricultural interventions disaggregated by ward, NGO and crop.

## **UNDP/European Union**

In 2003, the UNDP established a Relief and Recovery Unit (RRU) with EU and DFID funding. The RRU has a mandate to collect and distribute information about relief and recovery programs in the country. It also facilitates coordination of some of these activities.

## 4. Needs Assessment and Geographical Targeting

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Two different assessments are required before program beneficiaries can be identified. The first, discussed in this chapter, is to identify what parts of the country are affected by crop losses, ie what parts of the country to assist. The second, reviewed in Chapter 5, is a more detailed assessment of needs within target communities, and selection of household beneficiaries in these communities.

### Assessing the Scope and Distribution of the Emergency

Declaration of an agricultural emergency in Zimbabwe is the responsibility of the Minister of Labor and Social Welfare.

The Minister is responsible for reviewing production data collected by the Ministry of Agriculture and Rural Development and assessing the severity of rural and urban food insecurity. The final assessment relies heavily on the Second Official Crop Forecast, which summarizes aggregate crop production levels for the country as a whole and for various classes of farmers (large-scale commercial, small-scale commercial, communal and resettlement). Province-wise breakdowns may be provided for maize production.

Once an emergency is declared, village headmen and councilors are asked to compile lists of needy households to be targeted for food aid and input relief. These are aggregated to district and province levels to estimate the number of households in need.

Individual NGOs also seek information from their local contacts in rural communities where they are running programs. This may involve consultation with district and ward officials, AREX officers, chiefs, and village headmen.

For the first time, in 2003, VAC survey data allowed a disaggregated assessment of food

supply shortfalls in each district. These findings were summarized in *Emergency Food Security and Vulnerability Assessment (Report No. 3)*, commonly known as the VAC Report. The report estimated that 4.4 million rural residents (56% of the rural population) would need food aid, and that the government would need to import 754,800 tons of grain to meet these needs. Most importantly, this report provided a breakdown, by district, of the level of need – measured in terms of the number and percentage of households experiencing cereal supply deficits.

### Selection of Districts and Wards

NGOs select which parts of the country to target for relief assistance based on their past experience and the location of their current programs. Informal consultations with other NGOs will also help select target areas. Older NGOs tend to follow their

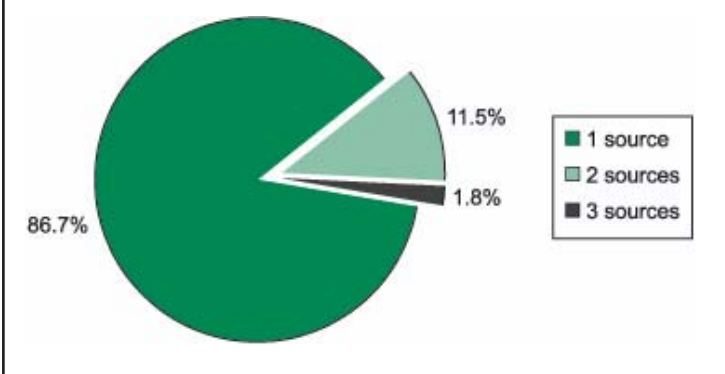
established contacts in particular districts and wards. Newer NGOs look for districts and wards that are not covered. Permission is then sought from Province and District authorities to distribute aid within a particular district or ward.

The FAO Emergency Unit for Zimbabwe collects data on NGO activity by district and ward. The 2002/03 database highlighted the likelihood of over-coverage of certain districts and under-coverage of others – based on the perceived distribution of need. The 2003/04 database highlighted similar problems. Many districts received more inputs than needed to assist the entire population identified by the VAC report as being in need.

FAO also collects data on the distribution of agricultural inputs by ward. This again showed over-coverage of many regions, with multiple NGOs sometimes serving the same

*The 1993 VAC survey estimated that 4.4 million rural residents (56% of the rural population) would need food aid – 754,800 tons of grain would need to be imported.*

**% of farmers receiving inputs from multiple NGOs**



*Over 30 NGOs (plus government agencies ARDA and GMB) were distributing relief inputs in one area studied*

ward. These findings were confirmed in surveys conducted by ICRISAT.

Most observers in the NGO community acknowledge the need for better coordination of their relief efforts, down to the ward level. But this will remain difficult, as long as NGOs' plans continue to evolve during the early stages of the cropping season. This happens if funding grants arrive late, the identification of local partners is prolonged or simply because NGO staff take an extended period of time to establish contacts with local

*Substantial over-coverage and overlaps are reported. Many districts receive far more inputs than needed; multiple NGOs sometimes serve the same ward. One major reason is lack of coordination between NGOs operating in an area.*

authorities. In the worst cases, decisions about ward and village coverage are still being made while input delivery is underway.

In order to improve coordination, the FAO Emergency Unit seeks to obtain data from each NGO on their intended ward level input distribution early in the cropping season.

Ultimately, stricter agreements may be needed, earlier in the planning process, about geographical coverage. As long as multiple NGOs operate in a district, strict delineation of zones of coverage may prove

difficult. However, an early agreement on ward coverage should help reduce the

current overlaps in community coverage. This agreement would need to be in place at least four months before the first inputs are distributed. An IO/NGO protocol is currently being developed, highlighting (among other issues) the need for early identification and dissemination of assistance plans. This will help address some of the problems

associated with over-coverage and overlapping.



## 5. Household Targeting

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The first priority for any relief program is to establish robust criteria for interventions at household level. To identify which households should receive assistance, two basic sets of decisions must be made. First, NGOs must identify the types of households to be targeted. Second, they must establish a procedure to identify these households. In either case, it is useful to involve the local community in the selection process. Local transparency increases the chances of accurate targeting.

### Types of Households Targeted

There are no universal criteria to identify vulnerable households. The choice of indicators or criteria depends on the NGO; its priorities, mandate, specific constraints, and the political environment.

Most relief programs target the most vulnerable households. However, many NGOs also target assistance to households participating in their ongoing development programs.

Many indicators have been proposed for the selection of vulnerable households. These are, in effect, proxy indicators for food supply deficits. The most common:

- Child headed households
- Female headed households
- Elderly
- Widows and widowers
- Households with disabled members, chronically ill members or orphans
- Households with limited cash income, no pension and no formal employment
- Households with high dependency ratios
- Households with limited assets

Questions then arise about how these indicators are best measured. Many of the criteria are vague – how should the term ‘elderly’ be defined; what is meant by ‘limited assets’ or ‘high dependency ratio’. One option is to establish explicit criteria for each

variable – eg minimum/maximum age ceiling on household assets, target dependency ratio. Such stringent criteria have the obvious advantages of clarity, and can minimize inclusion/exclusion errors. However, they tend to be costly to implement. Few NGOs have the field staff necessary to collect and evaluate such information for each target community. As a result, most NGOs prefer more flexible criteria, laying down the general principles for selection and leaving the responsibility for selection to the community.

Questions are also being asked why only the poorest households benefit. Some community leaders argue that village food security can be better enhanced by providing assistance to better endowed households, which are more

likely to use the inputs to produce a crop surplus. These households are said to be more likely to employ members of more vulnerable households and to provide the most needy with food and seed. These claims have been backed by evidence that many poorer households only use part of the inputs they receive.

To cope with these arguments, some NGOs combine their vulnerability indicators with an additional set identifying households likely to ‘seriously’ invest in crop production. These commonly include:

- Households with adequate land for planting ( a minimum level is specified)
- Households with adequate draft power for land preparation
- Households with enough labor to grow a crop
- Households not engaged in gold panning or other off-farm activities

Yet several of these latter indicators contradict those used to identify the most vulnerable households. This is particularly true for draft power. In many communities more than 40%

*Stringent, clearly defined criteria can minimize targeting errors – but may be costly and sometimes inappropriate. More flexible criteria lay down the general principles for selection and allow community participation in selection of beneficiaries.*

of households – generally the poorest and most food insecure – do not have enough cattle or donkeys to field a minimum team of 2 animals. They may rent or borrow animals or draft services from relatives and neighbors. This leads to late planting and low yields. However, most of these households should still be classified as committed farmers.

## HIV/AIDS Affected Households

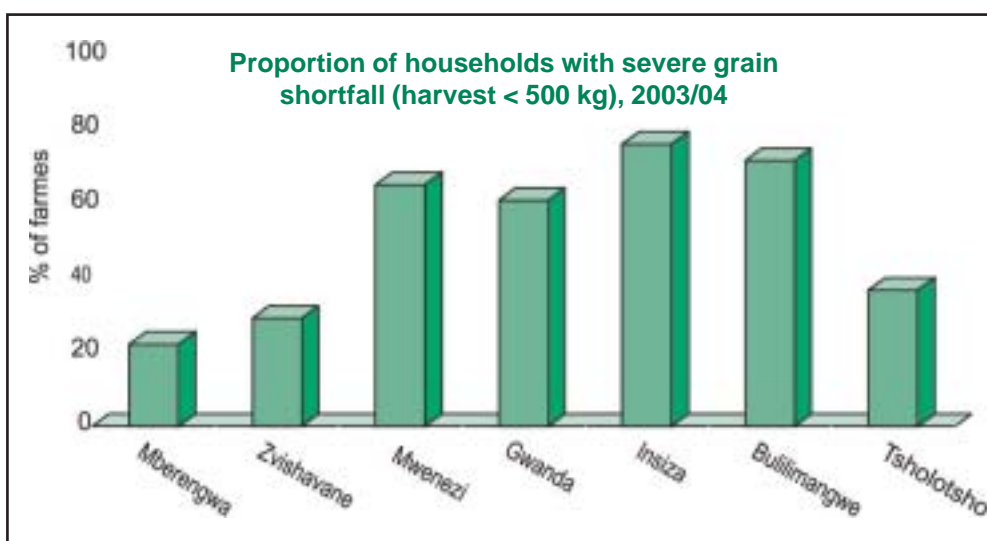
Approximately 26% of Zimbabwe's adult population (ages 15 to 49) is officially classified as HIV-positive. Rates are marginally lower in the rural areas, but highly variable across districts. The high rates of prevalence have led donors to recommend explicit targeting of HIV/AIDS affected households. This advice is reflected in many of the indicators used to identify vulnerable households – child headed households, households with chronically ill members, or households with many orphans or large dependency ratios.

While there has been much talk of child headed households, the actual proportion of these families in rural Zimbabwe appears low – less than 2% of the population. Children are commonly taken in by aunts, uncles and grandparents. However, NGOs need to watch for cases where an older relative is said to be responsible for a group of children, but misuses relief assistance. There is anecdotal evidence of cases where an uncle responsible for a group of orphans simply collects relief inputs for his own use, leaving the children to fend for themselves.

The capacity of HIV/AIDS affected households to make effective use of

agricultural inputs is also uncertain. A recent assessment by the VAC<sup>1</sup> highlights sharp declines in both area planted and production levels among affected households. These are due to labor constraints, as well as the loss of farming assets sold to pay for medicines or funeral expenses. The most significant declines in production are linked with the recent death of an adult decision maker. However, little is known about the coping strategies these families pursue to offset resource constraints over a period of several years.

One option is to provide specialized relief and development support targeting HIV/AIDS affected households. In one such program, orphans, or youth from households that have lost adult decision makers, are being given training in new income earning opportunities such as small-scale poultry enterprises. In other cases, HIV/AIDS affected households are being encouraged to concentrate on improving food production from nearby



household plots. Many relief programs incorporate HIV/AIDS awareness training.

## Procedures for Identifying Vulnerable Households

Most NGOs struggle to identify which specific households should be classified as

1. Vulnerability Assessment Committee (VAC). 2003. Zimbabwe emergency food security and vulnerability assessment, April 2003. Harare, Zimbabwe: VAC.

vulnerable, and thus meriting of assistance. Strategies range from more formal procedures of data collection, to less formal discussions with community leaders or full community meetings.

CARE follows a more formal practice (see box). Following community meetings to introduce the intended program, all community members are asked to register for possible assistance. Households complete a simple one page registration form (see **Appendix 2**) providing information on the main proxy indicators of vulnerability. The data from these forms are computerized and the vulnerable are identified using cut-offs linked with the amount of assistance available. The beneficiary list is then taken to the community for verification.

This approach requires strong advance planning and ground level support, more likely to be available among large, well established NGOs. Farmers like it because the procedure is viewed as impartial. However, this procedure can be prone to error insofar as potential aid recipients are aware of the criteria being used to judge whether they qualify. While ground-truthing can reduce these biases, this process also can be manipulated by local elites.

An alternative strategy is to call a community meeting and let the community itself identify the most vulnerable or needy households. In general, village leaders are asked to gather all households to a meeting which is addressed by local and NGO officials. The general criteria are announced, and the community then identifies which households should receive assistance. A public discussion is believed to reduce cheating. It also ensures broad awareness of the reasons why some households receive aid while others do not. This strategy is also quicker, cheaper and more transparent than formal data collection.

Yet this procedure is also said to be prone to bias. Some farmers may complain that they were shut out of the process as a result of

### Steps in registration and household targeting – Example 1

1. Hold province and district level meetings to introduce the intervention
2. Call for awareness meetings (through local councilors and traditional leadership) to explain intervention and selection criteria (see application form)
3. Communities line up by village; pre-screening by communities begins
4. Application forms issued, completed and sent to NGO office. Vulnerables who do not attend the meetings cannot apply for benefits
5. Applicants entered into database, selection criteria applied
6. Initial beneficiary register produced
7. Verification meetings to clean registers
8. Final beneficiary lists prepared

their political views or distance from community elites. This is particularly problematic in periods prior to elections.

While methods for identifying target households are becoming more exact, the proportion of households receiving assistance remains high. In many communities in the drier, more drought prone parts of the country, 80% or more of households are receiving assistance. In effect, the definition of vulnerability appears highly elastic depending on the resources available.

Debates about what proportion (or number) of households should be assisted can be resolved only through a closer analysis of the relationship between the proxy indicators of poverty or farming capability, and the impacts of input distribution. To date, there have been no significant efforts to test these relationships.

## Steps in registration and household targeting – Example 2

Guidelines are first developed for the selection of beneficiaries to ensure uniformity in operations by district teams. The criteria include:

- Households without draft animals and with limited small stock
- Female-headed (de jure) households
- Households with limited cash income, no pension, no formal employment and little or no remittances
- Households with a high dependency ratio, ie, high numbers of children, orphans, handicapped, terminally ill and the elderly
- Male-headed households with limited assets (satisfying criteria 1 and 3 above)
- Households should be acceptable to the community as being able to utilize the seed offered.

If sufficient quantities of inputs are available, selection may be opened to households that have less than a defined number of draft animals (this 'limit' to be determined at district level), and satisfy criteria 3 and 4 above.

Registration is conducted in open community meetings in the respective wards and food distribution points. The registration team reads out and explains the selection criteria to the community. Each community then collectively selects beneficiary households who meet the criteria. A cross-section of households is later visited to verify the information supplied.

## 6. Basic Input Support Basket

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The types of inputs to be provided depend on the objectives of the relief program and the characteristics of the local farming system. Most relief programs distribute seed in order to help farmers re-establish themselves after a flood or drought. Seed is a simple technology that can readily be divided to assist large numbers of households. But seed alone may contribute little to household food security. Other kinds of inputs/interventions may offer higher returns on investment. The following discussion summarizes some of these trade-offs.

### How Much Seed to Distribute?

Drought is the most common factor triggering seed interventions in Zimbabwe, but not the only factor. Some parts of the country periodically experience flooding. But access to seed may also be limited because seed markets fail, or because the capacity to purchase inputs may be reduced by high rates of inflation.

To determine how much seed to provide, NGOs must first consider the fact that, contrary to common opinion, smallholder communities rarely, if ever, run completely out of seed. In drought years, some farmers will lose most of their seed stocks, and the aggregate level of community stocks may be reduced. But many farmers will remain with seed, and local seed markets perform reasonably well at reallocating these stocks. Following seasons of favorable rainfall, most of these transactions involve cash or barter trade. Following drought years, gifts predominate. As farmers themselves describe it,

*Seed relief helps farmers re-establish themselves after a flood or drought. But seed alone may contribute little to household food security. Alternative inputs or interventions – crop production and fertilizer training, market information, improved varieties – may offer higher returns on investment.*

*“I have an obligation to help my neighbor with seed, just as she has an obligation to help me in return when my harvest falls short.”*

Unfortunately, years of seed relief have conditioned farmers to complain about seed shortages even if the shortage is not severe. Drought affected communities are similarly conditioned to show visiting NGOs their empty granaries. The visitors assume that all seed is lost. But the fields actually planted the following season almost always contain a wide range of traditional and improved varieties – far beyond the limited range of seeds distributed through relief programs.

While recognizing the proclivity of farmers to ask for aid, studying the community’s seed needs will help an NGO assess what seeds of what crops are most likely to be in short supply. ICRISAT has worked with farmers and village authorities in neighboring Mozambique to develop a seed needs assessment methodology<sup>1</sup> that provides a first approximation of community requirements. This considers the availability of stocks from better than average farmers, from upland fields, from grain markets and from the retail market.

The success of seed fairs in many countries (including Somalia, Sudan, Kenya, Tanzania and Mozambique) provides ample testimony to the capacity of farming communities to maintain local seed stocks (Chapter 9 discusses seed fairs in more detail). Seed fairs based on the supply of seed from local farmers have been successfully implemented in many communities in Zimbabwe.<sup>2</sup> These commonly supported the

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1. ICRISAT/INIA. 2003. Organizing seed fairs in emergency situations: improving the efficiency of seed distribution. Maputo, Mozambique: ICRISAT and INIA.
  2. During the 2003/04 season, seed fairs were implemented by CRS/CTDT, FACHIG and World Vision in more than 10 districts in Zimbabwe. Local seed markets failed to provide a significant share of seed in only one area, Matobo District south of Bulawayo. This is the first known example where seed fairs have not attracted significant local seed stocks. This was likely due to two factors – many households in the area rely on remittance income, and the season was preceded by two consecutive years of severe drought.

delivery of commercial maize seed to complement locally available seed of crops such as sorghum, pearl millet, cowpea, pumpkin and various squashes.

Such experiences again highlight the importance of targeting. Some households will have seed of many different crops while others maintain only limited stocks. Shortages are more likely for legumes, compared with cereals. In Zimbabwe, farmers are accustomed to purchasing hybrid maize seed on the retail market. In some communities farmers particularly sought maize seed through relief programs in order to reduce their purchases.

### Improved vs Traditional Varieties

Seed distribution programs should not be used to distribute new varieties of uncertain adaptation and acceptance. Seed from local grain markets may be better than seed imported from unknown sources outside the country. However, many Zimbabwean farmers look to relief programs as a source of access to new varieties.

Relief programs are largely responsible for the widespread adoption of new white sorghum (SV 2 and Macia) and pearl millet (PMV 2, PMV 3) varieties in the country. These varieties mature early, increasing the probability of a harvest if rains end early. Relief programs are also the main (though limited) source of the drought tolerant cowpea variety IT 18. During the past year, relief programs have been virtually the only source of new, open-pollinated maize varieties now being grown in Zimbabwe. All these new varieties were widely tested in the country before being released by the government and distributed by NGOs.

The main problem, revealed in recent surveys of relief programs, is that farmers commonly lack information about the varieties they are receiving. In a recent survey of 1500 households, at least 40% of farmers did not know the names of the varieties provided by various NGOs. They did not know the growth characteristics of the crop, or even whether this was hybrid or open pollinated seed. This helps explain why many farmers did not plant all the seed they



*Improved varieties offer substantial yield gains over traditional varieties – as much as 50% in a bad season*

received – logically, they sought to assess the variety’s performance before allocating more of their land.

The payoffs to relief programs can often be considerably enhanced if they are able to provide farmers access to more productive new varieties. The international agricultural research institutes of the CGIAR as well as the national research and extension services can provide useful information about the existence, performance and availability of new varieties.

## Hybrid vs Open Pollinated Varieties of Maize

More than 90% of Zimbabwean smallholders have experience growing hybrid maize. This widespread adoption resulted from the remarkable performance – even in drought prone areas – of several hybrids released during the 1970s. Most of these farmers discarded open-pollinated varieties (OPVs) of maize in favor of hybrid seed; and the government subsequently outlawed the sale of OPV maize in the country. Consequently, sales of hybrid maize were entrenched.

In late 2002, Zimbabwe changed its policy and allowed ‘fast track’ registration of five open pollinated maize varieties for distribution and sale in the country. One of these varieties, Kalahari Early Pearl, is an older variety widely promoted in relief programs in neighboring countries. The other four (ZM 421, ZM 521, Matuba and Obatampa) are new varieties from CIMMYT. Small quantities of several of these varieties were distributed for the first time through relief programs in 2003/04. Larger quantities of seed are now being produced for delivery during the 2004/05 planting season.

Many NGOs have expressed interest in promoting sales of OPVs so farmers can more readily save seed from their harvest. Some claim farmers are better off growing OPVs. However, this decision should be made by farmers, not by NGOs. On-farm trials have shown that OPVs perform well.

Farmers now need to be educated about the differences between OPV and hybrid maize,

## Hybrids versus OPVs

Given adequate rainfall and inputs, hybrids will generally give higher yields than open-pollinated varieties (OPVs). However, the actual difference in yields depends on the choice of variety.

A main advantage of OPVs is that farmers can re-use a variety for several seasons before buying fresh stocks of certified seed. This saves money. Correspondingly, OPVs may be suitable for smallholder farmers who cannot afford to purchase inputs, and those living in outlying areas with weak input markets.

Zimbabwe has a long history of hybrid crop breeding. It was the second country (after the USA) to release maize hybrids. By the mid 1980s, virtually every small-scale farmer in the country had experience growing hybrid maize. In fact, sales of OPV maize seed were banned. In recent years, however, high seed prices have encouraged a shift back to OPVs. In 2003 the sale of OPV maize seed was legalized.

NGOs should be aware of this history of hybrid seed development, and be sure that farmers understand whether they are receiving hybrid or open pollinated seed.

and offered the opportunity to try both. For example, NGOs can distribute 5 kg of each type and encourage farmers to experiment. Such experimentation is likely to have longer-term impacts than simply distributing whatever seed is most readily available.

## Maize in Drought Prone Regions

Some NGOs similarly argue that maize seed should not be distributed in drought prone regions because it simply perpetuates the need for food aid. But farmers in these areas are well aware of the risks of maize production; and adopt strategies such as timely planting on better soils, or multiple plantings, in order to improve the probability of a harvest.

Undoubtedly, maize is less drought tolerant than sorghum or pearl millet. Farmers in most drier regions of the country consistently plant these small grain crops as a form of insurance against rainfall risk. Yet maize also has well known advantages. If rainfall is fairly consistent through the season, maize will generally give higher yields than sorghum or pearl millet. It is also less prone to bird damage, and easier to consume as a green vegetable during the period before the main harvest, when household food supplies are lowest. Maize is commonly viewed to be easier to process into meal or flour.

Once again, farmers should be given the choice. Most will choose to grow maize plus either sorghum or pearl millet, regardless of the views of NGOs.

## Seed Packs

There is no single best seed pack to distribute to all farmers in Zimbabwe, or even to all farmers within a particular agro-ecological zone. Relief programs first need to consider what crops are commonly grown in the target district or community, and then consider what seed is most likely to be needed.

The distribution of crops grown in Zimbabwe is summarized in Figure 1 (and in greater detail in **Appendix 3**). Maize is widely grown. Sorghum and pearl millet are most important in the drier parts of the country – Natural Regions IV and V. Groundnut is locally important in many areas while cowpea tends to be more common in the drier areas. Sugar beans tend to be grown in higher rainfall zones and in areas close to urban markets.

Survey evidence suggests that rural communities are most likely to retain significant seed stocks of drought-tolerant crops with high multiplication ratios, such as sorghum and pearl millet. Farmers commonly look to relief programs for new varieties of these crops.

Maize seed is more difficult to retain, if only because much of the seed being planted is of hybrids. Farmers hope relief programs will distribute fresh maize seed so they need not buy it. However, there is also growing interest in gaining access to the newly available maize OPVs.

Legume seeds are most likely to be in short supply, because of the low multiplication ratios and the high demand for legume grain, which is considered a premium food.

Plot sizes are generally small and available stocks are quickly consumed as a snack or relish. Larger supplies may be sold in the high priced confectionery market, particularly by households needing a bit of cash.

The next question is how much seed to distribute. Again, much depends on the relative availability of seed from the formal and informal markets. However, a starting point for poorer households who have lost most of their seed is to provide enough

seed to plant just over 1 ha of a mixed cereal and legume crop. Table 1 shows two possible crop packs – one suitable for areas where maize dominates (eg the higher rainfall areas of Natural Regions I, II and III), and the second for areas where sorghum or pearl millet are more important (low rainfall areas, Natural Regions IV and V).

The harvest will depend more on the crop management practices employed than the quantity of seed provided. Table 1 shows the approximate harvest expected if rains are fair to good. Yields will be much higher, in either environment, if improved management practices are used. Yields will be lower if crops are planted late (relative to the timing of individual rainfall events) or on poor quality soil.

Both these alternative seed packs contain more legume seed than is normally provided in Zimbabwe's relief programs. Groundnut or cowpea allotments are usually small

*Farmers are usually self sufficient in seed of sorghum and pearl millet; but relief programs can play a crucial role in introducing new varieties. For maize farmers want hybrid seed as well as new OPVs. Legume seeds is often in short supply, because of the low multiplication ratios, small quantities harvested, and high demand for legume grain.*



**Table 1. Two alternative crop packs to plant approximately 1 ha**

Higher rainfall zone			Lower rainfall zone		
Seed quantity	Area planted	Expected harvest*	Seed quantity	Area planted**	Expected harvest
10 kg maize	0.5 ha***	600 kg	8 kg maize	0.4 ha	300 kg
4 kg sorghum	0.5 ha	500 kg	5 kg sorghum <i>or</i>		
10 kg groundnut	0.15 ha	100 kg	3 kg pearl millet	0.75 ha	550 kg
			10 kg groundnut <i>or</i>		
			8 kg cowpea	0.15 ha	50 kg

\* An average 6-member household needs approximately 1 ton of grain per year  
\*\* Cereals are planted at lower density in drier regions  
\*\*\* Officially recommended planting rate for maize is 25 kg/ha, but farmers commonly plant at 20 kg/ha

because the seed is expensive, and only limited stocks are available on local markets. Investments in legume crop seed multiplication may be needed in order to make this package more practical.

Also, NGOs frequently complain that farmers consume their groundnut or cowpea seed allocations. The reasons include: limited quantities of legumes are available on local grain markets, or from food aid. Groundnut, cowpea and beans are highly valued as a complement to the grains provided in aid allocations. Correspondingly, there may be good justification for distributing more legumes in food aid allotments during the legume planting season.

### Seed Quality Issues

There are frequent reports of poor quality seed being distributed through relief programs – low germination, mixed genetic purity, or poorly adapted varieties. The best way to avoid these problems is to purchase well-labeled seed of known varieties of reliable origin.

Seed companies normally test the germination rates of seed they intend to sell. Purchase contracts may specify a minimum level of germination. In general, seed of cereal grains should have a germination rate above 85%. Seed of legumes, such as groundnut or cowpea, should have a germination rate above 70%. Problems of low germination are more common for legume seed than for cereal grains. NGOs can easily test germination rates of the seed

they receive before distribution. Simple selection and testing procedures are described in **Appendix 4**.

The most common problem with relief seed for secondary crops such as sorghum, pearl millet and cowpea is mixed seed lots. Some cases have been noted, where seed companies bought and sold common grade seed when their own stocks ran short. Most of this seed is purchased from the local grain market, cleaned for physical purity and checked for germination. But it may not always be clearly labeled as common grade seed. Instead, it may be labeled generically as mixed cowpea, or simply as white sorghum or pearl millet. NGOs must then decide whether to offer farmers seed of an uncertain and possibly mixed variety, or no seed at all. At least, this seed is likely to be suited to local environments, although it may be no better than the seed available in local, informal seed markets.

During the past 12 years, any poorly adapted seed sold in Zimbabwe has invariably been imported. Pearl millet seed purchased from India following the 1991/92 drought, was generally late maturing and low yielding. In 2002 and 2003, several seed companies sold large quantities of a white sorghum variety labeled as Macia. However, this proved to be a late maturing variety purchased from the Mozambique grain market. Most of this crop yielded no grain because it matured long after the rains were over. Most unfortunately, this seed was mis-labeled. Macia is a popular early maturing variety tested and released in Zimbabwe,

and several other countries in southern Africa. The seed in question was probably a landrace variety found in the longer season highlands of Manica Province. Poor seed quality, poor markings and bad labeling are being addressed through discussions with the major seed houses. Protocols are also being drafted, that stakeholders are expected to adhere to.

### Timing of Seed Distribution

Zimbabwe's planting season somewhat uniquely extends over a three month period. Planting commonly begins just before rains start in late October. Pearl millet is often planted into dry ground, while maize and legumes are planted in the days immediately following a major rainfall event. November rainfall is usually highly variable in both timing and distribution. Rains are more common in December, so most planting is done between 15 Dec and 15 Jan. Usually, planting is completed by midJanuary. However, rainfall in the 2003/04 season was highly variable, so plantings continued into early February.

Farmers generally plant legume crops early (before midDecember) and cereals over an extended period on multiple plots. The latter strategy helps offset the risks of flowering during a mid-season dry spell. This particularly affects the productivity of maize. Sugar beans may be planted late in the season, sometimes on the residual moisture available after the harvest of an early crop.

Since planting may begin as early as late October, farmers want their relief seed by late September. Strictly speaking, early seed distribution contributes more to household certainty about seed availability, than to early planting. If relief seed is delivered early, the farmer does not have to purchase or borrow seed; this in turn provides a measure of livelihood security.

### Community Seed Production

Community seed production programs have been widely promoted as a means to multiply and distribute new (and traditional) varieties of limited interest to the commercial sector. Some of these programs encourage



*All plants in this photograph were grown from seed labeled Macia – the tall plants in the background produce leaves but little grain, under Zimbabwean conditions*

the community to produce OPV seed on contract for a commercial seed company. But most involve production for localized sale within the community – seed producers are expected to sell to neighbors experiencing production deficits.

These programs have generally failed to meet expectations. None has proved self-sustaining, and in most cases the willingness of farmers to pay a premium price for seed from their neighbors has been over-

estimated. Most programs find it hard to consistently obtain pure foundation seed after the first year or two of special project attention. Farmers are encouraged to adopt stricter quality control measures than they would normally use for their own seed crops, but such measures are costly to police and of uncertain value to local communities. Virtually all these projects have difficulty with seed sales. If production levels are high, participating farmers commonly ask the NGO to purchase their seed for sale to other communities.

Nonetheless, community seed production can provide a practical way to accelerate the distribution of new varieties of limited interest to the private sector. In this case public subsidies to support the distribution of foundation seed, farmer training and technical supervision, may be justified as investments to speed the adoption of new high yielding varieties. NGOs should consult with AREX or the international centers to identify new varieties suitable for these programs. Potential varieties currently include SV 3 (white sorghum), PMV 3 (pearl millet), Nyanda (groundnut) and IT 18 (cowpea).

## Draft Power

Seed distribution is often necessary to help farmers expand planted area. But the more binding constraint to expansion is lack of draft power, particularly among the poorer

farmers. In fact, lack of draft resources is a primary indicator of poverty. ICRISAT surveys in southern Zimbabwe show a close correlation between area of land planted and the availability of cattle for plowing. Shortages of draft power also delay planting, which in turn reduces yields.

Data on the impacts of drought on livestock numbers are limited. However, in more open-ended questions about input requirements, many small-scale farmers express a greater

*Community seed production programs have suffered a range of problems – non-viability, dependence on continuous external support; difficulties in marketing the seed produced, and in obtaining foundation seed. Nonetheless, community seed production can accelerate the distribution of new varieties of limited interest to the private sector.*

need for tillage support than for seed. But this constraint is difficult to resolve – restocking of cattle is expensive and time consuming, and contributes to overgrazing and land degradation. Efforts to promote tractor hire schemes have been fraught with problems. Plowing services are expensive, and tend first to be allocated to better connected farmers. Tractor drivers are poorly trained in the maintenance and use of their

equipment. Again, farmers waiting for these services often fail to plant on a timely basis.

One solution is to encourage farmers to prepare their land earlier, soon after the harvest. Agronomic trials from both Botswana and Zimbabwe consistently show high returns to winter plowing. During the post harvest period, draft animals are stronger and can plow larger areas. Demand for tractors is also low at this time, allowing more area coverage.

Alternatively, Zimbabwe's small-scale farmers can be encouraged to prepare parts of their fields by hand. Here the experiences of the Zambian Conservation Farming Unit are instructive. Planting basins can be prepared over an extended period following the previous harvest, allowing timely planting when the rains eventually begin.

## Fertilizer Distribution

Most of the soils cultivated by small-scale farmers, particularly in the drought prone



*Illustration from a Shona/Ndebele pamphlet on fertilizer use, distributed to 160,000 farmers across Zimbabwe*

(commonly known as maize fertilizer), and two 50 kg bags of ammonium nitrate (AN) per hectare are essentially irrelevant.

ICRISAT has collected considerable data from farm management surveys in the drier parts of Zimbabwe. One surprising finding was that many farmers fail to use the manure available to them – 60% of cattle or donkey owners did not use any manure on their field crops. Instead, it was left to rot in piles by the kraal.

Several years of on-farm experimentation have shown that most farmers are simply

regions, are grossly deficient in nutrients. In most years, lack of nitrogen is a more severe constraint than lack of water. Consequently, even 'improved' varieties give only limited yield gains. Average grain yields are less than 1.2 tons per hectare for maize, even in favorable seasons; and less than 800 kg per hectare for sorghum and pearl millet.

Farmers commonly complain that chemical fertilizer is expensive. In drier areas they claim it is either not available or too risky. Some argue it burns the crop, or 'impoverishes' the soil. In this context, national extension recommendations to apply three 50 kg bags of Compound D

unaware of the benefits of fertility management. Training and on-farm experimentation involving the use of small quantities of manure and chemical fertilizer can significantly improve yields. However, this requires more than simply distributing fertilizer – farmers must be taught to apply it to an early-planted, well-weeded crop. In 2003/04, approximately 160,000 farmers across the country received 25 kg packs of fertilizer with a pamphlet in the local language (Shona or Ndebele depending on the area) explaining how to use the fertilizer most efficiently. In the future, these efforts need to be extended with on-farm demonstrations and discussions.

## 7. Input Procurement

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Zimbabwe has one of the more sophisticated agricultural input markets in Africa. The country has more than ten seed companies and three retailers of chemical fertilizer. Wholesale and retail trade channels are well established for inputs relating to commercial crops. Despite this, during the past two years, large-scale relief programs have difficulty sourcing inputs for distribution. Seed (except for maize) and fertilizer are in short supply. Power lies with the input seller rather than the buyer. Correspondingly, quality and timeliness of supply are compromised; late buyers are forced to 'take what they can get'.

### Availability of Input Stocks

NGOs should first inventory the market to see what inputs are available; and consult like ARES or the international research centers about the relative benefits of alternative products. **Appendix 5** lists the varieties released on the local market. However, many are not consistently available. There are over 75 white maize hybrids on the national registration list, but only about ten of these are readily available and suitable for relief programs. Only one of the four sorghum OPVs, and one of the three pearl millet varieties is readily available, and only in small quantities (relative to relief demand). No significant stocks of groundnut are available; Zimbabwe consistently imports an older groundnut variety (Natal Common) from South Africa.

The country produces two main types of fertilizer targeted for maize production. Compound D, now being advertised as maize fertilizer, offers a mix of nitrogen, phosphorus and potassium (8-14-10). It is suitable as a basal dressing for most cereal crops. Other compound or basal fertilizers

were available earlier, but production has been discontinued.

Zimbabwe has long promoted the application of ammonium nitrate (AN) as a top dressing fertilizer for cereal grains. It is sold by two companies – Zimbabwe Fertilizer Company and Windmill. A third company (Omnia) has sought to sell urea to relief programs, but few Zimbabwean smallholders are familiar with this input.

*Zimbabwe has a strong private sector for agricultural inputs – but largescale relief programs have difficulty sourcing seed (except for maize) and fertilizer. In a seller's market, quality and timeliness of supply are often compromised.*

### Input Tenders

Most NGOs either purchase their inputs through tender or obtain them through bulk tenders issued by collaborating partners. Several common problems arise. First, most tenders specify the crop but not the variety. This allows seed companies to provide whatever variety is available.

This presents little problem in the case of maize because certified seed is readily available. However, the buyer will still need to specify a preference for OPVs vs hybrids, or for varieties suited to drier, drought prone regions.

Purchasing seed of most other grain and legume crops is more difficult. If varieties are not specified, the buyer is likely to be offered common grade seed of uncertain origin. This does not necessarily present a problem if it is purchased from local farmers. However, an opportunity may be lost to distribute improved varieties of greater interest to many farmers. In order to obtain these varieties, orders must be placed early and properly specified.

Contracts should specify quality standards for the seed – germination rates, maximum permissible content of foreign matter, and (if a particular variety is specified) genetic purity, ie maximum level of contamination with other varieties.

All seed production and trade in Zimbabwe is regulated by the Seed Services Department. All seed is supposed to be inspected in the field and again in the laboratory to ensure physical and genetic purity, germination rates and seed health. This system works reasonably well for maize, and for the small quantities of other crops sold on the commercial market. But the system cannot cope with the large quantities of seed being sold and distributed under relief programs. As a result, seed stocks are of variable quality, and genetic (varietal) purity is often a problem.

In this situation, buyers must often choose between purchasing standard grade seed and having little or no seed to distribute. This trade-off is difficult to judge. In general, common grade seed has not harmed smallholder farmers, and generally produces a fairly uniform crop. However, in areas where local seed stocks are more plentiful, NGOs are better off limiting their purchases to high quality seed of improved varieties and investing in fertilizer or tillage support.

Seed companies commonly need four to six weeks lead time to make deliveries. However, NGOs should be aware that relief seed and fertilizer are often delivered late, particularly if tenders are awarded late in the buying season (due to delayed funding and other factors). This is due to limitations in seed cleaning and packing, and constraints in the manufacture of chemical fertilizer. These difficulties have been worsened by the decline in the overall economy. Buyers may need to have clauses in their contracts penalizing suppliers for late delivery. **Appendix 6** shows a sample contract.

## Storage

It is important to arrange warehouse space when tendering for large seed and fertilizer purchases. Such stores may be hired in

larger business centers through rental agreements with local wholesalers or big retail shops. They should have waterproof construction, good ventilation, and ample space for orderly stacking of commodities. A checklist for assessing storage space is provided in **Appendix 7**.

## Labeling

One very common problem in relief programs is the lack of clear labeling of agricultural inputs – and of seed in particular. This results partly from limitations in the

availability of printed packaging. But in addition, most seed companies do not have the capacity to label thousands of smaller bags. At best, labels identify the variety and lot number required to trace the origins of the seed. In many cases, even this information is not available. Instead, farmers receive clear packages with no information about the seed type or variety characteristics.

Lack of labeling is of particular concern in the context of increasing distribution of OPV maize seed. Zimbabwean farmers are used to growing hybrids and will not necessarily expect to receive an OPV. If seed packs are not labeled, most will simply assume that seed must be repurchased the following season. This benefits the seed companies, but a development opportunity has been lost.

Finally, good labeling allows NGOs to track and document seed problems. The characteristics of the crop can be checked in relation to a variety name. The origins of mixed or mis-labeled seed can be tracked with a lot number. When problems are identified, seed companies often blame the farmer for contaminating their seed. But if unopened, but labeled, seed packets are found to be similarly contaminated, or otherwise deficient, it is easier to hold the seed seller accountable.

*Zimbabwean regulations require rigorous field and lab inspections of seed. This system works reasonably well for maize, and for the small non-maize commercial market – but not for the huge relief market. Relief seed often has problems of quality or varietal purity.*

## Packaging

Most NGOs request that seed be packed in a form suitable for delivery to individual households. A set of different seed crops may be packed into a larger bag for distribution to each farmer. Or smaller packets of several different crops may be distributed individually. The former strategy allows faster distribution in the village, and is more convenient for farmers (easier to carry a single 15 kg bag than several smaller bags).

The latter strategy is more flexible, allowing the NGO to adjust delivery strategies as needed. For example, one community may grow more sorghum, while a neighboring village may grow more pearl millet. Smaller package sizes increase flexibility, but may also make the logistics more complex.

*In areas where local seed stocks are plentiful – even if the quality is variable – NGOs could concentrate their resources on distributing high quality seed of improved varieties and investing in fertilizer or tillage support.*

In a few cases, seed companies deliver in larger 50 kg bags, which the NGO repacks into smaller units. This may reduce the price of seed and improve delivery schedules, because the major bottleneck is in packing seed in smaller lots. However, the time and effort required for repacking seed should not be underestimated; and the NGO itself must provide some sort of labeling.

During the 2003/04 cropping season, 160,000 farmers were each provided with 25 kg of ammonium nitrate fertilizer. The standard fertilizer bag is 50 kg. There was no way to repack it in smaller bags without significant additional expense and long delays. Ultimately, two farmers were asked to share each 50 kg bag. The success of this program is currently being evaluated.

## 8. Timing of Input Distribution

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There never seems to be enough time to complete every objective of a well functioning and well monitored agricultural input relief program. The funding arrives late, new staff members are difficult to find, and require more training and supervision than anticipated; and inevitably one problem or another delays the implementation of the program. Program planning and tracking can benefit, at least, from the creation of a calendar of activities. These need to be linked, ultimately, back to the farming calendar commonly employed by Zimbabwe's smallholders.

### Farming Calendar

Most smallholder farmers in Zimbabwe plant their main field crops over a single summer planting season. This usually starts just before the onset of rains in late October and ends with the completion of harvest in June or early July of the following year. Table 2 provides a rough calendar for the country as a whole.

Maize is commonly planted more than once in order to offset the risks of mid-season drought. Therefore one plot of maize may be

planted in November and a second plot in late December. Groundnut and cowpea tend to be planted earlier. Cereal grains are more likely to be planted later. Poorer households with limited access to draft resources commonly extend their planting into January, and occasionally to early February. This is because they may wait to borrow draft resources from neighbors who first want to complete their own planting. Most farmers would prefer to plant late than to till their land by hand.

According to this calendar, relief seed ought to be delivered to farmers by late October. However, if supplies are late, seed can still be delivered and productively used by poorer households in late December or early January. Basal fertilizer similarly needs to be in the hands of farmers by October, though top dress fertilizer may be distributed in late November or December.

### Program Calendar

Tables 2 and 3 show a possible calendar for relief operations, in relation to the farming calendar.



**Table 2. Summer season farming calendar**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep
Summer plowing												
Planting												
Weeding												
Basal fertilizer	At planting or 2-3 weeks after germination *											
Top dress fertilizer			Usually 1 month or more after germination, up to flowering									
Harvest						Legumes first, cereals later, except for green maize harvest						
Threshing												
Winter plowing												

\* Farmers in Zimbabwe commonly apply basal compounds only after germination, to reduce investment risks

**Table 3. Calendar for relief input program**

	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
Identify areas needing assistance													
Quantify assistance needed													
Proposal for funding													
Tender for inputs													
Organize delivery system													
Register recipients													
Distribute seed and basal fertilizer													
Distribute top dress fertilizer													
Assess distribution													
Assess use of inputs													
Evaluate program impacts													

## 9. Distribution Strategies

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Relief programs in Zimbabwe have experimented with several strategies for seed distribution in recent years. In many cases, direct distribution of free handouts is being replaced with more market oriented strategies. These include:

- Credit programs requiring farmers to deliver a portion of their harvest in exchange for inputs
- Vouchers redeemable for inputs 'sold' through rural retail shops
- Seed fairs where vouchers are exchanged for seed supplied by commercial and informal traders.

The advantages and disadvantages of these approaches are still being assessed. In general, efficient input distribution is expected to:

- Minimize errors of inclusion/exclusion (ie, assisting non-deserving households or leaving out deserving households) at the beneficiary identification and selection stage
- Provide farmers with inputs for which they have the agronomic knowledge and skills, and which relate to their crop production preferences. In addition, new products can be introduced provided farmers are given relevant training
- Enable farmers to receive inputs in a transparent and corruption-free fashion
- Minimize administrative costs of delivery
- Minimize donor dependency
- Minimize the disruption of input markets and where possible, facilitate market development.

Ultimately, multiple strategies may be needed in order to reach different segments of a population. The choice of strategy may depend on the capacity of NGOs, the strength of local markets, and the political and economic environment.

### Direct Free Distribution

This is the traditional method – small packs of seed and related inputs are distributed directly to individual farm households. Recipients are first selected and registered

(see Chapter 4). The registered households may receive an identification card or simply have their national identification cards listed. When seed or fertilizer is available, they are informed and mobilized.

Distribution is done in coordination with local district and ward authorities. NGO staff may address a meeting explaining the distribution procedure. Beneficiaries are grouped into village units, the names checked against the registration lists, and recipients' identities confirmed by village officials. The beneficiaries are then asked to sign for their input package before collecting it. Some NGOs ask for additional confirmation: the beneficiary signs a statement acknowledging receipt, and/or local officials or AREX staff counter-sign to confirm that the seed has been collected.

The key advantage of this strategy is its simplicity. Communities are mobilized in the same way as for food aid distribution, so community leaders and participating households are familiar with the process. Some argue this method is cheaper to implement than some of the alternative methods described below. However, a strict analysis of the costs of alternative distribution strategies would need to be done to confirm this.

### Input Delivery on Credit

In the main government program of input delivery, seed and fertilizer are distributed on credit through the Grain Marketing Board (GMB). In effect, farmers receive seed and fertilizer in return for a promise to sell their grain to GMB at the end of the season. In 2003/04, farmers had to show they had sold grain to GMB in previous years. Farmers who had repaid their earlier credit for inputs could essentially obtain what inputs they desired.

Little information is available about the details and success of this program. An unknown proportion of farmers receiving

credit in 2002/03 did not repay, and therefore did not qualify for loans the following season. The requirement of sales to the GMB effectively restricts participation to better-than-average farmers who had surplus grain despite the drought last season. Correspondingly, very few farmers in drier parts of the country have qualified for these loans.

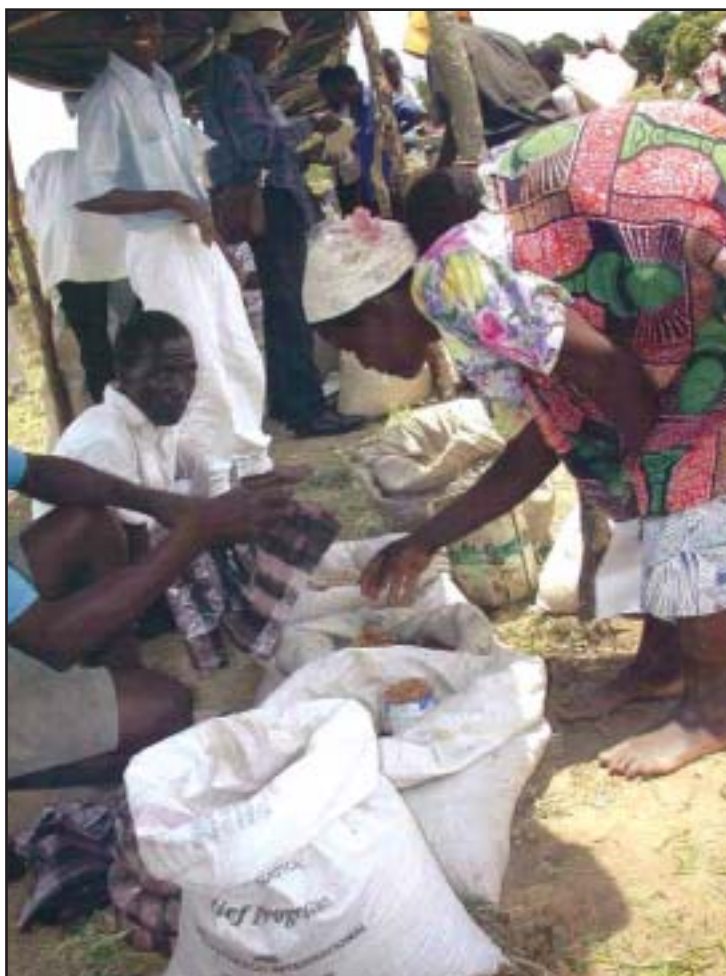
The advantage of this program is it reduces dependency on free inputs. The terms of the loan are more liberal than terms offered through the banking system; so farmers can build a credit rating while bearing only limited risks. The imposition of market controls appointing GMB as the sole buyer in the country, has increased the likelihood of repayment. But this may be difficult to enforce.

A variant of this strategy is for an NGO to take responsibility for collecting grain after harvest. This is not currently legal in Zimbabwe, but has often been used in neighboring countries. The main difficulty is the logistics of collecting small amounts of grain from large numbers of farmers – collection costs may be higher than the value of the grain. And farmers have an incentive to provide poor quality grain to meet numerical repayment quotas.

Some NGOs have also asked farmers receiving inputs (particularly seed) to return a small quantity of seed from their grain harvests. The problem is that the returned seed is of uncertain quality. It is difficult to assess seed quality in the field and the 'seed' being returned may be actually grain; of mixed varieties or with low germination rates.

## Seed Fairs

Catholic Relief Services (CRS), in collaboration with ICRISAT, have developed



*Seed fairs have proved effective and popular in several countries, including Zimbabwe, Kenya, Uganda and Sudan*

a strategy of using community seed fairs to deliver relief seed to small-scale farmers. The main objective of these fairs is to give farmers a choice of seed types and varieties. In particular, farmers can obtain traditional varieties from other farmers or local traders, instead of unfamiliar modern varieties. CRS and ICRISAT have written several manuals<sup>1</sup> describing how to implement seed fairs.

Farmer beneficiaries are first identified and registered. Arrangements are then made for a market day (fair) where anyone wanting to sell seed can participate: formal seed companies, local small-scale retailers, and local farmers with surplus seed. Each beneficiary is given a set of vouchers (different denominations for convenience) using which they can 'buy' seed from any seller at the fair.

1. CRS, ICRISAT and ODI. 2002. *Seed vouchers and fairs: a manual for seed-based agricultural recovery in Africa*. Nairobi, Kenya: Catholic Relief Services, ICRISAT, and Overseas Development Institute, UK.

On the day of the fair, traders are registered and allowed to display their seed stocks. There is no restriction on formal sector participation. Some fairs are open to those selling not only seed but other inputs such as tools or fertilizer. Some fairs may restrict the number of informal traders (ie local farmers selling seed), to keep the fair of manageable size. In most fairs in Zimbabwe, seed prices are set in advance, eg standard prices for a bag or cup of cereal/legume seed. In other countries, prices are left to market forces. The seed prices being set at fairs in Zimbabwe are commonly higher than seed prices on local markets. This is viewed as necessary to encourage more traders to participate, but it also contributes to seed price inflation.

Informal traders are expected to have their seed inspected for quality. However, this is sometimes difficult for field staff trying to manage large numbers of trader and buyers. Good advance planning is essential.

The total quantity of seed offered by each trader is weighed and recorded both at the beginning of the fair, and at the end. This helps the organizers monitor prices and limit cheating.

Farmers must spend all their vouchers on the day of the fair. After this the vouchers are worthless.

Seed fairs essentially build on the recognition that local seed stocks are usually available, often in substantial quantities, despite floods or drought. Village seed markets continue to operate. The fairs are predicated on the assumption that the main constraint facing vulnerable households is their inability to purchase the available seed. This assumption may merit further investigation.

One of the main gains from the fair is a substantial infusion of money into the rural community. This may have multiplier effects as seed sellers use their earnings to purchase labor or other village-produced commodities.

The main disadvantage of the fair is the complex logistics. The organizers never quite know how much seed will be available

until the fair opens and may consequently set seed prices higher than needed. Little is known about the impacts of seed fairs on local seed markets. Surveys in Zimbabwe suggest that fairs are monetizing a transaction that would normally take the form of a gift. Poorer households normally obtain free seed from their neighbors following drought years; and are expected to reciprocate when fortunes are reversed. The introduction of external institutions and large amounts of money to finance seed transactions may undermine such community obligations. However, the significance of this problem is unknown.

## Vouchers Redeemable at Retail Shops

CARE is implementing a program similar to seed fairs, where vouchers are distributed to target beneficiaries, and are redeemable for inputs at local retail shops. This takes advantage of the substantial market infrastructure in Zimbabwe's rural areas. Shops that regularly sell hybrid maize seed can be found in most rural communities. But this retail trade is severely compromised by the free distribution of relief seed. Even the prospect of such programs discourages retailers from stocking seed. Similarly, seed companies are discouraged from distributing through wholesale and retail channels if they can more easily, and perhaps more profitably, sell in bulk to a few relief programs.

The voucher program is a natural extension of CARE's recent efforts to provide business training to rural retailers, in order to improve their investment practices and entrepreneurial skills. In non-drought years, commercial suppliers were encouraged to provide inputs on credit to retailers thus trained. CARE agreed to provide monitoring support. A similar program of business training was implemented by the Citizen's Network for Foreign Affairs, in a program ultimately managed by AGMARK.

Though this is a more market friendly approach to the delivery of relief assistance, CARE still takes responsibility for buying all inputs. This has remained necessary, partly

because suppliers no longer provide inputs on credit to retail traders, in turn because of high rates of inflation in Zimbabwe (over 500%).

When inputs are available, they are distributed to the designated retailers, and farmers are notified to trade in their vouchers for a mandated package. The farmers must pay a small fee to cover the costs of storage and handling by the local retailer. This is said to reduce dependency on free inputs and ensure that farmers recognize the value of what they are receiving. Even the poorest farmers seem to have little difficulty paying these service fees. The income earned by the retailer is expected to be reinvested into the business.

In the future, farmers may be given more choice of what inputs to purchase. This is currently not possible because of the

logistics. The seed and fertilizer packages being distributed must match the value of the vouchers being redeemed. Also, seed must be reserved in bulk to ensure it is available. But subsidies empowering poorer farmers to make choices are probably more efficient means to provide agricultural assistance than mandated purchases.

The main disadvantage of this program is the complex logistics. Retailers must be identified and trained, vouchers distributed, and farmers organized on the day of input delivery. The main advantage is this creates or strengthens market linkages that will continue to function after the relief program has ended. As such, this may be the most sustainable of the delivery strategies currently being implemented in Zimbabwe.

Table 4 summarizes the advantages and disadvantages of these programs.

**Table 4. Advantages and disadvantages of alternative distribution strategies**

Advantages	Disadvantages
<p><b>Free, direct distribution</b></p> <p>Similar in logistical requirements to food aid delivery Most NGOs are familiar with the procedures for free input delivery Low establishment costs</p> <p><b>Credit programs</b></p> <p>Reduces dependency on free handouts insofar as farmers have to repay loans Provides some choice in the type and quantity of inputs to be obtained</p> <p><b>Seed fairs</b></p> <p>Provides farmers with a choice of inputs to be purchased Encourages local seed producers to expand their production Encourages development of informal, community seed market Brings cash into the rural community</p> <p><b>Vouchers redeemable at retail shops</b></p> <p>Encourages development of wholesale and retail input markets May provide choice depending on how the program is run Reduces risks of stocking agricultural inputs</p>	<p>Provides no choice of inputs Undermines retail trade of inputs Creates dependency on free handouts</p> <p>May undermine formal credit systems if credit is subsidized Risky to administer in drought prone regions</p> <p>High start-up costs in staff training and community organization May undermine local seed markets Inflates local seed prices Input availability is not guaranteed; need to check if seed is really available on local markets; can be difficult to determine if farmers are hiding stocks in order to qualify for handouts Elderly, disabled may have difficulty obtaining seed in a crowded fair May increase dependency on external interventions</p> <p>High start-up costs in organizing and training retail traders Still unclear how much collateral investment will be made by input supply companies in developing such retail trade Possibly prone to corruption – eg trader provides only partial allotments or asks for bribes</p>

## 10. Technical Support for Agricultural Recovery

Many NGOs involved in agricultural relief and recovery programs provide some technical support to complement the delivery of inputs. The support may include farmer training on varieties and crop management practices, implementation of demonstration trials, or distribution of information pamphlets. The key issue is: how much should we invest in these programs? And as a corollary, how to build linkages with partners who have the necessary technical competence?

### Information about Seed Varieties

Recent surveys have shown that too many recipients of relief seed do not know what varieties they are receiving from NGOs. The bag is sometimes labeled with the variety name; but this alone is meaningless without additional information. Few farmers will know the difference between the maize hybrids SC 403 and DK 8031; or between the OPV ZM 521 and the hybrid SC 501. Often, the seed packet is not even labeled. In such circumstances, farmers may be well advised to only plant part of the seed to check its performance.

A huge opportunity is lost if farmers lack the information needed to use their inputs effectively. If the unknown variety performs poorly, relief seed becomes suspect. If the variety performs well, farmers may be interested in purchasing it next year – but cannot, because the identity is unknown; the opportunity to develop a market is lost. Clearly, relief programs in Zimbabwe must allocate more investment to seed labeling and farmer education.

### Information about Fertilizer

At least 80% of farmers in drought prone regions (Natural Regions IV and V) have

little experience with chemical fertilizer. They may have received free fertilizer from a relief program, but will rarely purchase it. As a result, when fertilizer is distributed, it is used inefficiently. Some farmers will reject it altogether, worried that it 'worsens their soils'. Others may sell it to traders or to neighbors with irrigated plots. There are

stories of farmers who use the fertilizer to paint their house or keep snakes out of the yard!

In most cases the problem is lack of technical information on how to apply the limited quantities provided through relief programs. Many agronomists, even, have difficulty answering the question of how best to allocate 25 kg of ammonium nitrate. Should it be spread broadly, or concentrated on a small portion of the crop?

Should it be used on maize or sorghum?  
Should it be buried or broadcast?

Most NGOs rely on AREX extension staff to provide advice on fertilizer use. But they cannot simply assume that this advice will be provided in the normal course of extension programs. Rural extension programs do not have enough resources to make regular visits to small-scale farmers. The majority of these farmers never see an extension agent. And many extension staff have little training relating to severely resource constrained systems. Few can readily answer the question of how best to apply small quantities of fertilizer, other than to suggest that it ought to be applied with the rains. Training of extension staff may be needed.

During the past few years, ICRISAT has been working with provincial and district AREX staff to test alternative strategies for allocating small amounts of chemical fertilizer. This work is founded on the assumption that most farmers adopt costly technologies in a stepwise fashion. They will start with a small investment in fertilizer

*Most relief recipients lack the information needed to use the inputs effectively. This is a huge opportunity lost. Relief programs must expand investments in farmer education – seed labels and what they mean, crop management, fertilizer application rates and methods.*

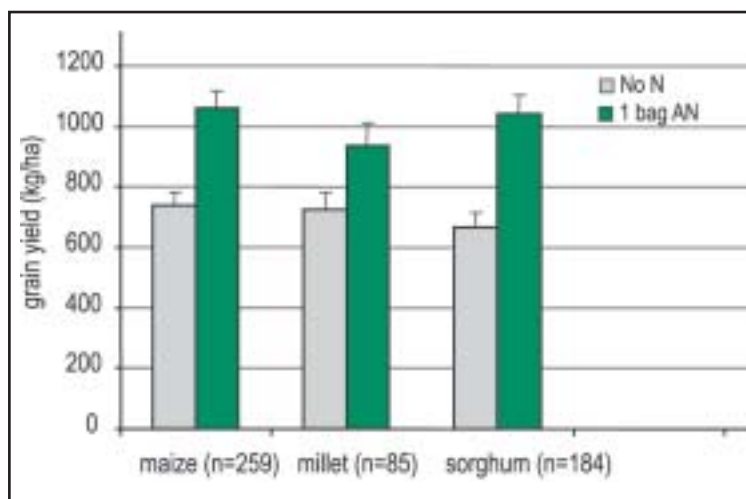
before considering the much higher recommended rates. The willingness of these farmers to expand usage depends on the payoffs to the initial small investment.

The key to this process is good targeting. In 2003/04, ICRISAT worked with the NGO community to distribute an illustrated one-page pamphlet describing how best to allocate exactly the quantities of fertilizer being provided through one major donor. It explained the need to target fertilizer to the plant, apply on a timely basis relative to both rainfall and crop growth, and to control weed growth. Every farmer received a pamphlet along with his/her allocation of fertilizer.

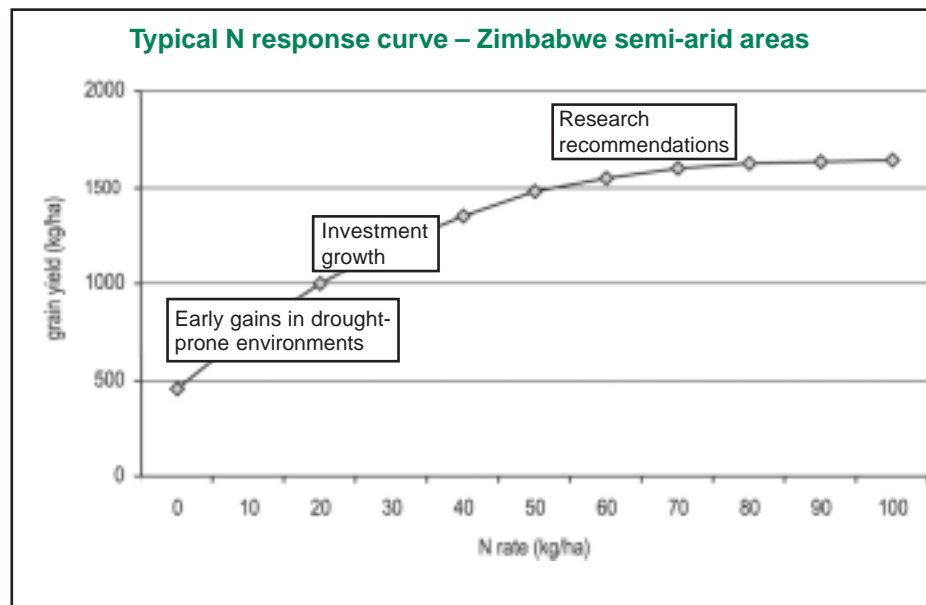
While the impacts of this effort are still being measured, at least some farmers have learned something more about a key crop management practice.

## Demonstration Trials

Several NGOs support demonstration trials to promote improved crop management



*On-farm trials in the semi-arid Matopos district in Zimbabwe show significant gains from a single bag of fertilizer*



*Official fertilizer recommendations are placed at the high end of the nitrogen response curve – recommendations at a lower level would be more practical, and give higher returns on investment*

technologies. World Vision, for example, manages an extensive training program for 'lead' farmers who are chosen by the community to work with and be trained by AREX officials. These lead farmers then establish a demonstration plot in the village, and in turn train five to 10 farmers on crop management methods. These Field School Groups (FSG) are centrally located to encourage more farmers to participate. The payoffs to such demonstration programs merit further assessment.

## Sources of Technical Support

AREX is generally the primary source of technical support, capable of backstopping relief and recovery programs. Indeed AREX staff are located in most of the country's wards and have a mandate for farmer training. Once again, however, NGOs should note that much of the training received by these staff applies to relatively high-input and more commercialized systems. AREX staff themselves may benefit from additional training relating to low-input systems.

ICRISAT has been working with the NGO COSV to train extension workers on low-input fertility



*The majority of relief beneficiaries lack information on how best to use the inputs received. Farmer training must be better integrated into relief budgets*

management strategies in Hwange district. Similar programs of training and demonstration trials have been launched with World Vision and CARE. There may be scope for obtaining support from other international agricultural research centers based in Zimbabwe, including CIMMYT and ICRAF.

Seed companies should be encouraged to work more actively with NGOs involved in seed distribution. The companies should be encouraged to view the distribution of new varieties as an investment in building a market; provide farmers with more information about their varieties; and

perhaps sponsor demonstration trials and field days. Fertilizer companies may be similarly encouraged to invest in strengthening extension programs relating to their products.

Finally, NGOs need to take advantage of the wealth of experience with Zimbabwe farming systems and input delivery available within their own community. During the past year, CRS has provided training to staff of other NGOs about how to implement seed fairs. But such initiatives are rare. An inventory of specialized programs within the NGO community could reveal an unexpected wealth of expertise.



## 11. Integrating Recovery Efforts with Development

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Most donors have separate budgets for relief and for development. Funding for relief programs is for short term investments that help people keep themselves alive (food aid) and re-establish their livelihoods (agricultural inputs). This is distinct from development programs with medium to longer term impacts.

This distinction derives from two factors. Some argue that the pursuit of development goals undermines efforts to provide short term welfare gains to the most vulnerable households. Such questions have arisen in recent discussions about seed and fertilizer allocations. Should they be allocated to households capable of producing more food per unit of input? Or to the poorest and most vulnerable households – who are likely to achieve lower yields (perhaps because of draft power constraints), but who would otherwise find it difficult to re-establish their farming activities?

The second factor is largely political. Some donors are willing to provide Zimbabwe with humanitarian assistance, but not development assistance. Relief programs may be funded, but not development programs.

In most cases, however, it is impossible to make a strict distinction between relief and development activities. Relief interventions inevitably contribute to community development – by introducing new varieties, improving rural incomes etc. Two questions then arise:

- How can we deliver agricultural aid in ways that are least disruptive of longer term development efforts, but still contribute most to household food security?
- How can longer term development efforts be linked with the provision of relief assistance?

In Zimbabwe, this debate has arisen in the context of several initiatives:

### 1. Seed market development

Free seed distribution, whether through direct distribution, through seed fairs or

through vouchers redeemable at retail shops, inevitably distorts seed markets. Large scale purchases by NGOs encourage seed companies to hold seed off the market in the hope of bulk sales to relief programs. Seed packing equipment is tied up serving the subsidized trade. Free, direct distribution discourages wholesalers and retailers from stocking seed, even if it is available through commercial seed companies.

The need for emergency assistance may justify short term interventions that disrupt local markets. However, NGOs may also consider a range of strategies for making relief distribution more market friendly. For example, tighter targeting of assistance to poorer households with limited capacity to buy from the commercial market. In general, voucher type programs, though harder to organize, can provide an element of choice within the context of existing market institutions. One key question is how much choice is logistically feasible.

The seed trade may also benefit from investments in the establishment of seed security stocks. There have been noticeable problems of seed quality, for crops other than maize. One reason is that following a favorable season, commercial markets for these seed crops are perceived to be limited. Seed stocks remain low, and when demand sharply increases, little is available. A development investment in building seed security stocks may have a high payoff when the next emergency occurs.

### 2. Community seed production

After every drought, there is renewed enthusiasm for community or local seed production schemes. These are promoted as means to improve seed security within rural communities. In most cases, community seed production is linked with the multiplication and distribution of new varieties. But farmers are also being encouraged to multiply and maintain stocks of favored traditional varieties.



*Some relief programs also distribute farming implements, to encourage adoption of improved crop management practices*

Community seed schemes potentially offer a good means to support the distribution of varieties of limited interest to commercial companies. However, NGOs need to consider the fact that these schemes depend on continuing financial and technical support from the public sector. The assumption that farmers will maintain community seed production programs on their own has proved unfounded. And there are problems of foundation seed supply, quality control and marketing that require careful planning.

### **3. Conservation agriculture**

The objective of Conservation Agriculture or Farming (CF) in Zimbabwe is to enable smallholders to adopt more productive and environmentally sustainable farming systems that improve yields, food security and soil fertility.

A CF Task Force has been set up in Zimbabwe, representing the major stakeholders, and has designed a CF package allowing flexibility according to

agro-ecological zone. This starts from the premise that soil should be managed in a more sustainable manner. The Task Force recommends no plowing (reduced tillage), maintenance and incorporation of crop residues, early planting at appropriate plant population, timely weed control, and rotations, preferably with legumes.

The package initially requires a large investment of family labor in land preparation and weed control. Farmers without draft resources are encouraged to dig planting basins during winter, before the rainy season. Those with draft power can simply create planting lines or furrows. Planting basins or furrows concentrate early rainfall around crop seeds, accelerating emergence and improving plant stands. Fertilizer and manure are more carefully placed near the plant, making more efficient use of available water and nutrients. Retaining crop residues reduces surface temperatures and over time, improves soil fertility. Deep rooting crops can be used in a rotation to break pans and aerate the soil. Rotations with legumes

reduce the quantities of mineral fertilizer needed.

Weed burdens tend to be high in the first year or two. However, weed populations quickly drop as the limited tillage reduces the germination of weed seeds. Over time, less labor is required than in conventional production systems, soil quality improves, and yield levels increase, even in drought years.

#### 4. Commercial markets for agricultural products

Some relief programs explicitly promote the production of more drought tolerant crops. In Zimbabwe, for example, the production of sorghum and pearl millet is encouraged as an alternative to maize in drier parts of the country. To reinforce these efforts, commercial linkages may be pursued with grain traders and processors. But NGOs

need to be aware of the difficulties of commercial market development in drought prone regions. The very likelihood of drought, and the associated variability in production levels, raises marketing costs. If a significant surplus is only available every other year, trade infrastructure is underutilized. In addition, low population densities in many drier regions lead to higher search and assembly costs.

The best option may be to establish linkages with private traders willing to take on most of the investment risks involved in commercial market development for drought tolerant crops. Relief programs can play a significant role by distributing improved seed or management advice for targeted crops. They may facilitate crop assembly or information sharing about market opportunities. These efforts can reduce the uncertainty and costs of the private trader's investment.



*Developing links between smallholder farmers and commercial markets is difficult – but can provide high payoffs to relief investments*

## 12. Relief and Recovery in Livestock Systems

Livestock are an important and integral part of Zimbabwe's agriculture economy, contributing 15 to 25% of the value of agricultural output in all farming sectors. Cattle production accounts for more than half this output. Goats, sheep, pigs and poultry are also widely important. Donkeys are important sources of draft power in the drier parts of the country.

Most livestock production in the communal sector remains semi-subsistence. Reproduction rates and offtake are generally low. Cattle are valued as much for their outputs – for tillage, transport, milk, manure and meat – as for their cash sale value. Goats and sheep are commonly maintained for smaller cash needs – to be sold or slaughtered when school fees need to be paid, or for household consumption expenditure. Almost all households maintain a few chickens as a source of protein and for cash purposes; poultry is of considerable importance to poorer households.

Despite the importance of livestock in the smallholder economy, investments in relief and recovery programs targeting this sector have been limited. Past government programs have sought to encourage de-stocking, and the use of state lands providing supplementary access to water and feed. During the past year, the government distributed feed rations to a small cross-section of districts worst affected by drought. Several NGOs supplemented these efforts with re-stocking programs for cattle and goats.

A study conducted in early 2004 reviewed options for expanding these interventions.

Several of the recommendations from this study are summarized here.

### Livestock Targets

National development efforts tend to emphasize production and veterinary support for cattle. But if a relief program is to assist poorer households, more attention must be directed to other species. Donkeys are relatively tolerant of drought and are a key source of transport and draft power. Small stock are important sources of food protein and petty cash income for essential needs such as medicines and school fees – especially in times of drought. Programs targeting improved poultry husbandry may benefit the poorest small-scale farmers.

### Animal Feed

Feedlots have been used in the past to provide drought relief to livestock producers. However, these favor cattle, which usually belong to the wealthier households. As such, they should be managed on a cost recovery basis; farmers could pay for feed either in cash or in the form of livestock.

Management of communal feed resources is a key part of drought mitigation



*Livestock are a key component of farming systems, especially in drier areas. Interventions must take account of crop-livestock synergies*

programs. Once a drought occurs, plans should be in place allowing access to state lands for grazing of selected groups of animals. Relief programs could assist with the collection of hay from roadsides or fodder from various browse species. Relief and recovery programs could also concentrate on delivering feed supplements to support the maintenance of a few key animals in the homestead *kraal*. These include items such as oilseed cake, sugarcane tops, liquid molasses, salt, urea, and high-energy protein cubes. Bran from the major mills could be targeted to poultry.

Farmers report that they selectively allocate feed to animals of particular value. However, many also claim to simply abandon animals that appear weak in order to focus their limited resources on stronger animals more likely to survive drought. Further training can improve this decision-making process.

## Veterinary Services

Improvement of animal health should also be recognized as a mitigation strategy. Healthier animals can better withstand shortages of food and water. At the onset of a drought poorer households with fewer animals could be targeted to reduce the vulnerability of remaining stock. Vouchers can be provided to poorer households to help them purchase feed and veterinary pharmaceuticals.

## Water Access

Droughts increase competition for dwindling community water resources. As surface water runs dry, animals and people turn to borehole water. In this context, underground water supplies need to be evaluated and monitored to promote sustainable use. NGOs can provide logistical support for village level water management committees, including assistance in repairing and maintaining boreholes.

## Production Support

Most communal farmers have limited access to animal husbandry advice. Technical

support for the production of donkeys and small stock is particularly limited. NGOs can assist ARES authorities with the development and dissemination of advice on housing, feed and nutrition, watering regimes, animal health, and reproduction. In all cases, advice should take account of the value of indigenous breeds.

## De-stocking and Re-stocking

Farmers are commonly advised to de-stock animals at the onset of drought in order to reduce pressure on limited feed and water resources, and thereby reduce animal deaths. However, few households heed this advice because of the low prices at such times, and the difficulty of re-establishing herds. These problems are aggravated by underdevelopment of livestock markets and lack of market information in many communal areas. One option is to more closely link de-stocking efforts with re-stocking support after the drought. Poorer households selling animals could be given vouchers to purchase new stock after the drought. Efforts to promote re-stocking should only be initiated when water and feed resources are replenished. These should not rely on exotic breeds. Poorer households with limited capacity to invest in feed and medicines may be better off with indigenous animals.

## Limiting the Need to Sell Small Stock

Communal farmers rely heavily on the sale of small stock for the purchase of basic necessities. Consequently, households with few animals risk falling into a poverty trap. When these animals are sold, it becomes difficult to re-establish herds or flocks. These households can benefit from targeted assistance protecting these minimum holdings from sale. Simple interventions targeted at poorer households can reduce their obligations to sell small stock. These include food aid, external support for payment of school fees (or a moratorium on

school fees), subsidies for medicines for both animal and human use, and supplementary protein.

## **Monitoring Systems**

A recent assessment of Zimbabwe's livestock sector revealed large gaps in the information available about livestock population levels and dynamics. This makes it particularly

difficult to plan livestock interventions. Priority must be placed on improved data collection and reporting systems for livestock and in particular for all non-cattle species; improved information on water resources available for livestock; improved information on livestock feed availability; and stronger monitoring and evaluation systems for relief and recovery interventions.

## 13. Monitoring and Evaluation

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Monitoring and evaluation programs will be designed in different ways depending on whether the objective is to:

- Document the implementation of the relief program
- Document the allocation of relief resources, eg how much seed was purchased and distributed to how many beneficiaries
- Measure the primary impacts, eg whether the seed was planted, how much additional land was planted and how much grain was harvested; or
- Document secondary impacts, eg did farmers understand what varieties they were receiving, how were these judged, was seed saved for the next planting season.

Some monitoring and evaluation plans also seek to collect a wider range of information about such issues as alternative livelihood strategies, household asset levels, or the impacts of HIV/AIDS.

There is no single correct method for conducting a program assessment. Rather, there are many different strategies for conducting different types of evaluations. Some may involve simple checklists to track the flow of resources. One example is the warehouse checklist found in **Appendix 7**.

Alternatively, we may use a brief one- to three-page questionnaire focusing on a few key indicators. Open-ended discussions may be used to identify problems with field practices. Longer formal questionnaires may be used to assess program impact. Each of these methods may be used with different stakeholders at different times.

The FAO Emergency Unit has created a spreadsheet to monitor the distribution of agricultural inputs by district and ward. This aims to assess input distribution coverage in the country and highlight areas of overlap. The success of this effort depends on the timeliness and accuracy of the data provided by NGOs. The data collection form for this spreadsheet is shown in **Appendix 8**. Some

of the data collected in 2003/04 are shown in **Appendix 9**.

The value of a program evaluation depends on the quality of the data collection and analysis. Consideration of a few basic principles can considerably improve the quality of these assessments.

### 1. Clearly define the specific objectives of the evaluation

If the objectives are unclear, the chances of collecting data sufficient to assess the program are sharply reduced. Is the objective to track the allocation of relief funds, to assess how farmers used the assistance, or to evaluate the impacts of this assistance? One way to clarify these objectives is to frame hypotheses identifying the impacts to be measured.

### 2. Define the indicators by which these objectives will be measured

If performance indicators are not explicitly specified, the probability of measuring any given impact is sharply reduced. What indicators should be used, for example, to measure whether relief seed contributed to an expansion of cropped area? If seed is obtained from various sources, these must be distinguished in the data collection. Ideally, data may need to be collected from similar sets of households who did or did not receive relief seed. What indicators should be used to estimate whether relief inputs contributed to food security? Again, estimates of total production will be inadequate if seed is derived from different sources. Complications arise in distinguishing the contributions of relief inputs (eg seed and fertilizer) from the contributions of management factors such as timely access to draft power.

### 3. Select the data collection method to be employed

Performance data can be collected in many different ways. Two common formats are (a)

formal, survey questionnaires and (b) informal, open-ended interviews. The latter include procedures like focus group discussions, participatory surveys and transect walks. Formal, quantitative surveys are most suited for the collection of data that are quantifiable – for example, quantity of inputs received, quantity of inputs used and the amount harvested.

Informal surveys are more suited to the collection of data that are difficult to quantify, such as opinions about the value of a program. They are also better for identifying problems. Often the two survey methods are used in combination. The informal survey may be used to help focus a formal survey. And informal interviews may then be used to learn more about problems identified by questionnaire responses.

Formal quantitative surveys are considered to be more expensive and time consuming than informal surveys. But this is not always true. In either procedure, much depends on the characteristics of the sample frame, and the sorts of information being collected.

#### **4. Frame questions so that the chosen indicators can be efficiently and unambiguously collected**

Many monitoring and evaluation programs start by drafting a generic questionnaire on input use and production levels. These sorts of surveys are highly prone to attribution errors (eg was the seed from a relief program or from the farmer's own stock) or failure to collect data critical to the evaluation (eg what is the value of the additional grain at the farmgate). A better practice is to craft a set of questions around two specific lists: a list of hypothesized impacts, and a list of the indicators by which these impacts will be measured.

Be sure the questions are properly worded so that responses will be as consistent as possible. Many monitoring questionnaires ask ambiguous questions. This makes the analysis difficult if not impossible. For example, questions such as "Did you like the seed" are much less useful than a series of questions about germination rates, seedling vigor, plant health, and relative grain yields.

#### **5. Identification of enumerators**

NGOs commonly use their own staff to conduct impact surveys. This creates two possible sources of bias. First, farmers may already perceive these staff as having a vested interest in certain responses. Most recipients already know they need to meet certain criteria in order to qualify for assistance. They may similarly believe that whether they receive assistance next year will depend on their answers to questions about what they did with this year's assistance. In addition, there is always a risk that stakeholders may have a vested interest in the result of the evaluation.

*There is no single correct method for conducting a program assessment. The method – a simple checklist, a brief questionnaire, or detailed interviews – will depend on what precisely is being assessed.*

#### **6. Train enumerators to ask the questions with care**

Effective training of enumerators commonly takes many days of discussion and practice. It is important that enumerators fully understand the purpose of the survey and problems of interpretation likely to be encountered in the field. They must be prepared to ask follow-up questions to resolve ambiguities in initial answers. Possible differences in interpretation of each question must be analyzed. Enumerators must be trained to be skeptical of first responses and to watch for inconsistencies in responses. And they must often be trained to learn with their eyes as well as their ears. This takes time and considerable practice.



## 7. Establish a sample capable of testing each impact hypothesis

Most monitoring and evaluation programs select sample frames of program participants with the objective of measuring changes in practice or result after inputs have been provided. This is difficult because the likely position of these households if they had *not* received assistance, is unknown. If a household had not received seed from a relief program, for example, it may have received it from a neighboring household. There is no way to test this proposition with a sample confined to relief recipients. An alternative is to deliberately select a sample that includes households that received assistance and those that did not.

The problem here is that these two sub-populations may have started from such different levels of resource endowment (vulnerable vs better off households) that differences at the end of the season remain difficult to attribute. Ultimately, the key issue is to be clear how the sample is chosen. If generalizations are to be drawn about a larger population the sample must genuinely reflect the characteristics of this population. This is

*Data processing and analysis must follow immediately after data collection. Delays will lead to difficulties – due to coding errors, data inconsistencies, and interpretation of results.*

generally achieved through randomization. A random sample of households is selected in a random set of villages in a random set of wards in the districts where the NGO has been active.

## 8. Organize data processing and analysis early

The longer the time lag between data collection and data processing, the more likely difficulties will arise in interpreting the results. Problems of coding can be quickly resolved if data processors are in contact with enumerators or survey supervisors. Questions about inconsistencies in the data collected from individuals or groups of respondents can similarly be resolved if analysis follows soon after data collection. As time passes, memories of field problems, or unexpected factors likely to influence interpretation of the data, are lost. And interest wanes in the completion of a complete and accurate analysis.

A sample of a generic monitoring plan is provided in **Appendix 10**. A sample of a formal questionnaire for post-planting assessment is provided in **Appendix 11**.

## Appendix 1. Key Contacts in Zimbabwe

### International Agricultural Research Centers

Center	Address	Telephone	Fax	Crops
International Maize and Wheat Improvement Center (CIMMYT)	PO Box MP 163, Mt Pleasant, Harare	04-301807	04-301327	Maize, wheat
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	PO Box 776, Bulawayo	083-8311 to 8318	083-8253 or 8307	Sorghum, pearl millet, groundnut, pigeonpea, chickpea
World Agroforestry Center (ICRAF)	P O Box MP128, Mt Pleasant, Harare	04-369122 to 124	04-728340	Agroforestry crops
Center for International Forestry Research (CIFOR)	74 Harare Drive, Mt Pleasant, Harare	04-369655	04-369657	Forestry

### Fertilizer Companies

Company	Address	Telephone	Fax	Business
Omnia	PO Box BW736, Borrowdale, Harare	04-369390	04-369393	Wholesale and retail
Windmill	PO Box WGT560, Westgate, Harare	04-334911 to 19	04-334910	Wholesale and retail
Zimbabwe Fertilizer Co	PO Box 385, Harare	04-753882 to 89	04-753881	Wholesale and retail
Sable Chemicals	PO Box 561, Kwekwe	055-23601 to 609	055-23611	Manufacturer
Zimphos	PO Box AY120, Amby, Harare	04-498837 to 47	04-487934	Manufacturer

### Seed Companies

Company	Address	Telephone	Fax	Crops
Agricultural Seeds and Services	PO Box 6766, Harare	04-700655 or 728021	04-700655 or 728021	Non-maize
Monsanto	PO Box EH 47, Emerald Hill, Harare	04-336626 to 28	04-336636	Hybrid maize
National Tested Seeds	PO Box 3018, Harare	04-310284 to 87	04-331050 or 310288	Numerous crops
PANNAR	PO Box 99, Ruwa	073-2631 to 34	073-2652	Maize, sorghum, others
Pioneer	Mutual Gdns 100, The Chase West, Harare	04-339301 to 303	04-339386	Hybrid maize
Prime Seeds	PO Box BW1798, Borrowdale, Harare	04-480501 or 02	04-480501 or 02	All + vegetables
Seed Co Ltd	PO Box WGT 64, Westgate, Harare	04-308881 to 88	04-304841	Maize, sorghum, pearl millet, sunflower, groundnut, cowpea
Zimbabwe Seed Trade Association	PO Box A1906, Avondale, Harare	04-332017	04-332017	

## Key Government Departments

Department	Address	Telephone	Fax	Focus
Department of Meteorological Services	PO Box BE150, Belvedere, Harare	04-778160	04-778161	Rainfall data
Famine Early Warning Network (FEWSNET)	PO Box 7810, Harare	04-744434		Climate analysis and prediction
Surveyor General's Office	PO Box CY54, Causeway, Harare	04-775550 to 52	04-780808	Cartography, geographical surveys
Central Statistical Office	P Bag 7705 Causeway, Harare	04-794571		Data collection and analysis

## Appendix 2. Sample Household Registration Form

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### Emergency Agriculture Recovery Application Form

1. Application form no
2. Name of interviewer
3. Date of interview

#### Geographical Information

4. Region      Gweru            Masvingo            Zvishavane
5. District      Gokwe            L/Gweru            Kwekwe            Bikita        
                     Chivi South            Chivi North            Masvingo            Zaka        
                     Mberengwa            Mwenezi            Zvishavane
6. Ward
7. Village
8. Kraal
9. Nearest Business Centre/School

#### Household Information

10. Name of household head
  11. National Registration Number
  12. Gender of household head                  Male                        Female
  13. Age of household head
  14. Marital status of household head                  Married                        Divorced        
     Single                        Widow
  15. Level of education of household head                  Primary                        Secondary                        Tertiary
  16. Is the household head employed                  Yes                        No
  17. Name of respondent (if not the household head)
  18. Relationship to household head                  Child                        Spouse                        Worker
  19. Next of kin to household head
  20. National Registration Number of the next of kin
  21. Household Size
  22. How many members of your family fall under each of the following categories?
- |                         | <15                      | 15-35                    | 36-55                    | >55                      |
|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Male                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Female                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Disabled persons        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Chronically ill persons | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

23. In what numbers do you own the following livestock and assets?

	Number
Cattle	<input type="checkbox"/>
Donkeys	<input type="checkbox"/>
Goats	<input type="checkbox"/>
Plows	<input type="checkbox"/>
Cultivators	<input type="checkbox"/>
Previous harvest (how many bags of maize)	<input type="checkbox"/>

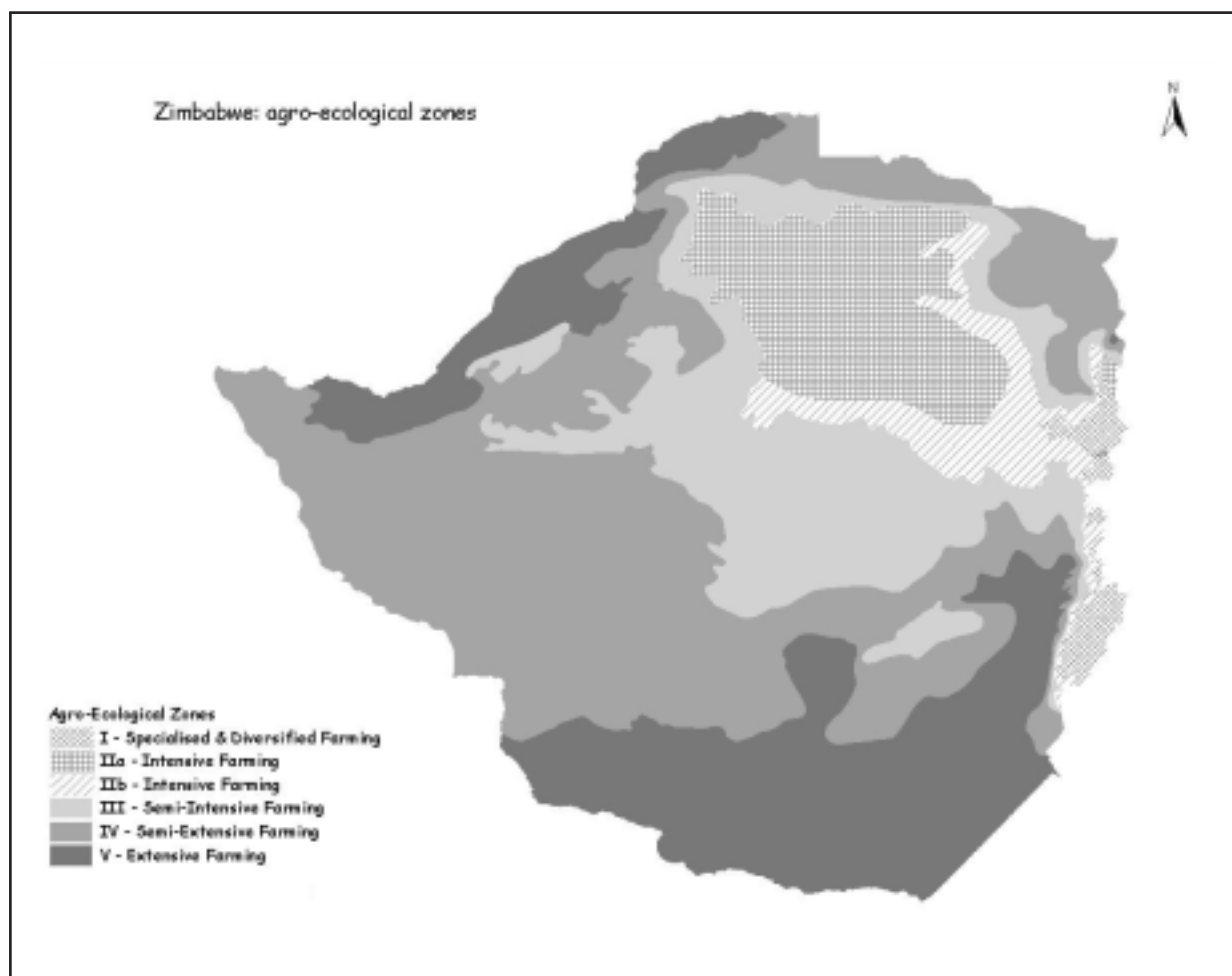
24. Any other assistance received from other development agents

	CARE	Govt	Other NGO	Other
Food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inputs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

25. Type of household

Child headed	<input type="checkbox"/>	Elderly	<input type="checkbox"/>	Widowed	<input type="checkbox"/>	Male/Female defacto	<input type="checkbox"/>
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## Appendix 3. Agro – Ecological Zones and Crops Grown in the Communal Sector of Zimbabwe



Natural Region 1 – High rainfall, at least 900 mm

Natural Region IIa – Moderate and fairly consistent rainfall, 750-1000 mm

Natural Region IIb – Moderate but less consistent rainfall, 750-1000 mm

Natural Region III – Lower and less consistent rainfall, 650-800 mm

Natural Region IV – Low and inconsistent rainfall, 450-650 mm

Natural Region V – Low and highly inconsistent rainfall, less than 650 mm

### Percent of area planted to alternative crops in each Natural Region

Natural Region	Maize	Sorghum	Pearl millet	Finger millet	Groundnut	Cotton
1	69	8	3	3	6	3
2	76	1	-	2	9	9
3	58	3	2	3	9	20
4	55	11	10	2	10	8
5	35	36	14	1	8	3

Source: Ministry of Agriculture and Rural Development, AREX, various years

## Percent of area planted to alternative crops in each province

Province	Maize	Sorghum	Pearl millet	Finger millet	Groundnut	Cotton
Manicaland	62	9	7	2	9	4
Mashonaland East	72	3	3	3	12	3
Mashonaland Central	54	4	1	1	7	29
Mashonaland West	63	3	1	0	6	21
Midlands	60	5	6	4	9	12
Masvingo	50	14	6	7	16	3
Matabeleland North	52	17	20	0	2	4
Matabeleland South	36	35	17	1	8	0

Source: Ministry of Agriculture and Rural Development, AREX, various years

## Appendix 4. Simplified Method for Testing Germination Rates

### Sampling Procedures

a) *Pre-packed seed*: select one bag at random from each lot, taking account of the appearance of the seed. This should appear representative of the larger sample.

b) *Bulk seed or seed in larger grain bags or seed from seed fairs*: select samples from seed lots greater than 100 kg only. Take 5 samples from a single seed lot, mix these in a bucket, and select 1 kg from this lot. These samples should be selected from different parts of the seed lot, taking account of the following:

- Heavy and light seeds segregate in storage with heavier seeds found usually at the bottom
- During harvest, seed is combined from different locations resulting in variations of seed maturity, disease or occurrence of weeds
- Seed is not always properly blended
- Harvesting, conditioning, and storage conditions can vary within a bulk and thus change its uniformity. Seed stored on the top of a bin or wagon may be subjected to different conditions than the seed stored in the middle or at the bottom of the bulk.

### Testing Procedures<sup>1</sup>

Place two pre-cut circles of newspaper (plain newspaper, not colored) into the bottom of a plastic lid. Moisten the paper with 5 ml of tap water. This may be measured out using a 5 ml



*Simple germination tests – requiring only limited skills and equipment – can help ensure that relief seed is of adequate quality*

1. Adapted from Taylor JRN. 2001. Methods to identify and specify characteristics desired by industrial sorghum processors. Technical Report no.2. Prepared for USAID. Pretoria, South Africa: University of Pretoria.

medicine measure. The newspaper circles must be saturated with water, but there must be no free water on the surface. Use a little less water if necessary.

Count out 50 to 100 intact seeds and spread evenly over the surface of the moistened paper so that none of the seeds touch each other. Cover the lid with aluminum foil to close it. Place the lid in a polystyrene box with a close-fitting lid.

Incubation may be carried out at ambient temperature (20-30°C). Maintain high relative humidity in the box by placing two layers of thin cotton dishcloth saturated with water at the bottom of the box, covering the entire surface area; and placing two layers of thin cotton dish cloth saturated with water covering the plastic lids. The cloths must be re-saturated with water each day of the test.

Examine the seeds after 24, 48 and 72 hours. At each time interval, count the germinated seeds and remove them from the plastic lid. A seed is said to have germinated if the root has penetrated the pericarp. At each time interval calculate the percentage germinated grains. Duplicate determinations should not differ by more than  $\pm 5$  grains, eg first determination 95%, second determination 90% or 100%.

Germinative Energy is the mean of the duplicate determinations, expressed as a whole number. Results should be expressed as Germinative Energy (%) 24 hours, 48 hours, 72 hours:

Germinative Energy (%)	24 hours	48 hours	72 hours
Sample X	84	92	95

## **Appendix 5. Seed Varieties Released for Sale in Zimbabwe**

Hybrid maize – there are about 75 white maize hybrids on the list from SeedCo, Pioneer, Pannar, Monsanto, the Crop Breeding Institute and the African Centre for Fertilizer Development

Open pollinated maize: ZM 421, ZM 521, Matuba, Kalahari Early Pearl (KEP), Obatanpa

Open pollinated sorghum: SV2, SV3, SV4, Macia

Hybrid sorghum: DV 75, PAN 888, NS 5511, Scud

Open pollinated pearl millet: PMV 1, PMV 2, PMV 3

Groundnut: Falcon, Flamingo, Jesa, Teal, Nyanda

Bambaranut: Kazuma, Mana

Cowpea: CBC1, CBC2, CBC3, PAN 238, PAN 311, IT 18

Beans: Iris, PAN 127, PAN 138, Nandi, PAN 148, Bounty



## Appendix 6. Sample Contract for Procurement of Inputs

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### AGREEMENT

Made and entered into by and between

**XXX** and **XXXX**, Hereinafter referred to as Contractor  
(name of NGO) (name of supplier)

on **26 Feb 04**

in relation to: Procurement of agriculture inputs for Emergency Agriculture Project, 2003/04 agriculture season

#### 1. PURPOSE OF AGREEMENT

This agreement between XXX (name of NGO) and the Contractor concerns their relationship to supply XXX (name of NGO) with locally produced agricultural-inputs necessary for their program, which involves the supply and delivery of inputs to farming families.

#### 2. CONTRACT OBJECTIVE

The contractor will supply 150 tons of Sugarbeans seed by 15 March 04.

#### 3. GENERAL TERMS OF THE AGREEMENT

Either party must first approve, in writing, any and all deviations from the parameters of this Agreement and Annexes.

All communication relating to this Agreement shall be directed only to the Country Director of XXX (name of NGO) (or nominated representative) if for XXX, and the Contractor (or nominated representative) for the services required. The parties will notify each other of the relevant contact persons.

Neither party will undertake any work for other agencies using resources from this project unless contractual obligations have been met. Nothing in this contract will prevent the other party from entering into separate Agreements with other agencies for other projects or activities, provided that such agreements do not detract in any way from the efficacy of this Agreement.

Neither party shall sub-contract any of the work covered by this Agreement without the prior written permission of the other party.

#### 4. AGREEMENT PERIOD

The effective commencement date of this Agreement is the date this agreement is signed by both parties. This Agreement shall terminate automatically without notice on 31 Mar 04, unless terminated earlier pursuant to Articles 9 and 10 of this Agreement.

#### 5. RESPONSIBILITIES OF THE CONTRACTOR

THE contractor Agrees to supply and deliver to XXX, 150 tons of Sugarbeans seed by 15 March 04.

This amount will be broken down into seed packs containing 2 kg of Sugarbeans seed composited into 50kg packs. Based on the above tonnage the Contractor will provide 75,000 x 2 kg seed. The entire consignment of seed packs should be delivered to XXX's (name of NGO) warehouses by 15 March 04 as outlined in paragraph 5.3.

## 5.1 PRODUCT QUALITY AND SPECIFICATIONS

The Contractor will supply XXX with Sugarbeans seed (Red Speckled (Bonus Type)) with minimum germination 80% and minimum purity 98%. Seeds should be accompanied by a **seed analysis certificate** and the following documents where applicable: commercial invoice, certificate of origin, phytosanitary certificate, waybills, GMO-free certificate and a fumigation certificate.

## 5.2 PACKAGING

The 150 tons of Sugarbeans seed will be packed into strong plastic packs of 2 kg and composited into a total of 3000 x 50kg. Product and weight is to be clearly marked on each bag.

## 5.3 DELIVERY

Location	Masvingo	Gweru
# of 50kg Composite packs	2400	600
Tonnage	120	30
Address	Add necessary details	
Person in charge	Add necessary details	
Date	15 March 04	15 March 04

The contractor will supply and deliver composite seed packs according to the following schedule:

All supplies delivered must be accompanied by the Contractor's dispatch note. The receiving official at XXX (name of NGO) shall sign at least two copies, keeping one copy for XXX and returning the other to the Contractor. The signed delivery note bearing the signature of the XXX receiving officer shall constitute proof of delivery by the Contractor to XXX. The XXX receiving officer will raise a goods received note which should tally with the Contractor's delivery note. The basis of payment will be this duly signed GRN and an accompanying invoice.

## 5.4 PRICE

The Contractor will supply and deliver seeds to XXX at the following rates and total

Price per 2 kg packet	US\$	1.79
Price per ton	US\$	895
Total cost	US\$	134,250

*Transport:* Will be paid upon submission of transport invoices for a maximum of Z\$ 113 804 per ton to Masvingo and Z\$ 107,281 per ton to Gweru.

## 5.5 PAYMENT TERMS

The agreed total value of the contract of US\$ 134,250 shall be paid 15 days after the delivery of all the 150 tons as per 5.3 to the following bank (details below) submission of a valid invoice accompanied by goods received notes, seed certification documents and where applicable, other certificates as per section 5.1.

Bank:

Sort code:

SWIFT code:

Account name:

Account number:

## **5.6 PENALTIES**

Any seed packs that are damaged or found not to meet the specifications detailed in sections 5.1 and 5.2 whilst under the Contractor's responsibility will be replaced by the Contractor at no cost to XXX.

Due to the nature of the project and the importance of avoiding any delays in supply of the commodity to XXX it is essential that the delivery schedule is strictly adhered to, or bettered. Late deliveries, other than due to Force Majeure (section 9), may invoke penalties at a rate of 5% of the unit price per ton per seven days.

XXX may satisfy penalties owing to it by way of deductions from payments to be made to the Contractor under this Agreement.

## **6. DISCUSSIONS WITH THE PRESS**

Neither party will enter into any discussions relating to this Agreement with members of the press, on or off the record, without the permission of the other party.

## **7. INSURANCE**

The Contractor shall, at its own expense, establish and maintain appropriate workers compensation, medical care and disability insurance cover for its personnel in respect of claims for illness, bodily injury or death, or damages to or loss of, their property, that may arise from the execution of this Agreement.

## **8. CONFIDENTIAL NATURE OF THE AGREEMENT**

The Contractor shall never reveal to any person outside XXX, any information acquired as a result of its association with XXX, without authorisation. Nor shall the Contractor at any time use such information for its own advantage. These obligations survive the expiration or termination of this Agreement.

Neither the Contractor nor its staff shall disclose to any person or organization, in any manner or form, during the period of this Agreement or after its expiration, any privileged or confidential information of XXX. Likewise, neither XXX nor its staff shall disclose to any person or organization, in any manner or form during the period of this Agreement or after its expiration, any privileged or confidential information of the Contractor. The specific exception to this requirement shall be XXX's donors to whom it may disclose such financial and operational information of the Contractor as is necessary for the execution of this Agreement.

## **9. FORCE MAJEURE**

"Event of Force Majeure" means, in relation to either party, an event or circumstance beyond the reasonable control of that party (the Claiming Party) including, without limitation (whether or not by the Claiming Party), acts of God, acts of War, invasion, revolution, insurrection or other acts of a similar nature or force, or sabotage or damage by an enemy of either party.

The Claiming Party shall not be deemed to be in breach of this Agreement or otherwise liable to the other party (the Non-Claiming Party) for any delay in performance or any non performance of any obligations under this Agreement (and the time for performance shall be extended accordingly) if and to the extent that the delay or non-performance is due to an event of Force Majeure

PROVIDED THAT:-

- a) The Claiming party could not have avoided the effect of the Event of Force Majeure by taking precautions which, having regard to all matters known to it before the occurrence of the Event of Force Majeure and all relevant factors, it ought reasonably to have taken but did not take,

- b) The Claiming Party has used reasonable endeavours to mitigate the effects of the Event of Force Majeure and to carry out its obligations under this Agreement in any other way that is reasonably practicable and,
- c) Failure to adhere to the contract by reason of non availability/shortage of components and other materials required to fulfil the contract shall not be regarded as Force Majeure, but a breach of contract.

The claiming Party shall promptly notify the Non-Claiming Party in writing of the nature and extent of the circumstances giving rise to the Event of Force Majeure.

If the Event of Force Majeure in question prevails for a continuous period in excess of 10 days after the date on which it began, the Non-Claiming Party may give notice to the Claiming Party terminating this Agreement. The notice to terminate must be given in writing and specify the termination date, which must not be less than 5 clear days after the date on which the notice to terminate is given. Once a notice to terminate has been validly given, this Agreement will terminate on the termination date set out in the notice. Neither party shall have any liability to the other in respect of termination of this Agreement due to an Event of Force Majeure, but rights and liabilities which have accrued prior to termination, shall subsist including, without limitation, those under Article 18.

## **10. TERMINATION AND SUSPENSION**

This Agreement may be terminated at any time;

- **For cause**, if it is determined by either party that the other party has failed to comply with the conditions of this Agreement;
- **For convenience**, if all parties agree that continuation of this Agreement would not produce beneficial results commensurate with further expenditure of funds. All parties shall agree upon termination conditions, including the effective date and in case of partial termination, the portion to be terminated.

Certain provisions herein, including without limitation, the provisions of this Article and Articles 6, 8 and 12 inclusive, shall survive any termination or expiration of this Agreement.

## **11. DISPUTES**

In the event of a dispute an independent arbitrator will be appointed by the agreement of both parties.

## **12. NON-LIABILITY**

Neither party shall indemnify and hold harmless the other party, and its officers, successors and assigns, from and against any and all claims, demands, liabilities, expenses (including reasonable lawyer's fees and disbursements, court costs, judgements, settlements and fines), whether of omission or commission, that may be committed or suffered in connection with the performance of this Agreement by either party or a partner or agent of either party. This paragraph shall survive termination or expiration of this Agreement. Neither party assumes liability for any third party claims for damages arising out of this Agreement.

## **13. LIMITATION**

Neither party by making this contract has any obligation to provide other additional support services or contracts to the other party for the purposes of this Agreement or otherwise.

## **14. AMENDMENT**

This Agreement may be amended, in writing, subject to written approval by XXX and the Contractor.

## 15. NO PARTNERSHIP

Nothing in this Agreement and no action taken by the parties pursuant to this Agreement shall constitute, or be deemed to constitute, a partnership, association, joint venture or other co-operative entity between the parties.

## 16. WAIVER

A waiver of any term or condition of this Agreement shall be effected only if given in writing and signed by the waiving or consenting party. No failure or delay on the part of either party in exercising any right, power or privilege under this Agreement shall operate as a waiver thereof. No breach of any provision of this Agreement shall be waived or discharged, except with the express written consent of the parties. The right and remedies herein provided are cumulative with and not exclusive of any rights or remedies provided by law.

## 17. ASSIGNMENT

This Agreement is personal to the parties to it. Accordingly, neither party may, without the prior written consent of the other, assign the benefit of or the obligations of either party under this Agreement.

## 18. INVALIDITY

If any provision of this Agreement is or becomes invalid, illegal or unenforceable in any respect under the law of any jurisdiction, the validity, legality and enforceability under the law of that or any other jurisdiction of any provision of this Agreement shall not be affected or impaired in any way thereby.

## 19. GOVERNING LAW AND JURISDICTION

This Agreement (and any dispute, controversy and proceedings or claim of whatever nature arising out of or in any way relating to this Agreement or its formation) shall be governed by and construed in accordance with Zimbabwe Law. Each of the parties to this Agreement irrevocably agrees that the Magistrates Court at Harare shall have exclusive jurisdiction to hear and decide any suit, action or proceedings in the first instance and/or to settle any disputes, which may arise out of or in connection with this Agreement and, for these purposes, each party irrevocably submits to the jurisdiction of the Magistrates Court of Harare. Either party may withhold fees and compensation due to the other party until a settlement has been reached.

## 20. ENTIRE AGREEMENT

This Agreement contains the entire understanding of the parties hereto with respect to the Emergency Agricultural Recovery Project. This Agreement supersedes all prior agreements and understandings between the parties with respect to such subject matter. Any amendment to the Agreement shall only be valid if evidenced in writing and signed by the duly authorized representatives of the parties.

## 21. AUTHORITY

By his or her signature below, each signatory represents and warrants that he or she is duly authorized to enter this Agreement on behalf of the party he or she purports to represent such that, upon execution and delivery, this Agreement shall be binding obligation of such party.

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<b>XXX (name of NGO)</b>	<b>Contractor</b>
Name	
Position	
Signature	

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## Appendix 7. Warehouse Checklist

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Name of implementing partner:

Location of warehouse:

Contact details:

Responsible official:

Date of visit:

### Checklist 1

1. Is the warehouse tightly constructed, waterproof and adequately ventilated?

Poor  Fair  Good

2. Stacking of commodities: are they stacked in an orderly, countable manner, away from the walls and not too close to the ceiling? Are the stacks marked and is there space in between them for easy mobility and access?

Poor  Fair  Good

*No stocks*

3. Is there evidence of infestation, slack or damaged bags, damaged or rusted containers?

Yes  No

4. Is there more than one type of commodity on one stack and in the warehouse?

Yes  No

5. What is the condition of the packaging of the commodities?

Poor  Fair  Good

*No stocks*

6. Are pallets used on stacks?

Yes  No

7. Is there a procedure for removal/ disposal of damaged commodities from the warehouse?

Yes  No

### Checklist 2

1. Are rodents present and are there any signs of feeding?

Yes  No

2. Is there refuse or other conditions that serve as an attraction or breeding area for insects?

Yes  No

3. Is the warehouse provided with fire extinguishers/ buckets for safety precautions?

Yes  No

4. Is the warehouse road accessible in all weathers?

Yes  No

5. Evaluate the communication system ( telephone, telex or other)

Poor  Fair  Good

6. Are there any openings that permit entry of insects or birds through windows, doors or ventilators?

Yes  No

### Checklist 3

1. What is the state of the roof? Does it leak or retain water?

Poor  Fair  Good

2. Is there a smooth passage of air through the warehouse so that no moisture collects in the warehouse

Yes  No

3. Monitor the lifting of bags by loaders (to prevent tearing or weakening of the bag)

Poor  Fair  Good

*No activity*

4. Assess the reporting format used in the warehouse to check if it captures all important stock movement information, ie receipts, dispatches, stock losses and balances.

*There is a ledger in use at the warehouse that details all the receipts and dispatches. There should however be a Goods Received Note that XXX (name of NGO) complete and give to the transporter instead of relying solely on the transporter's delivery note.*

### COMMENTS:

*Generally the warehouse is good and well kept. The main worry is whether it can accommodate 300 tons of fertilizer at one time.*

## Appendix 8. Datasheet for Monitoring Distribution of Agricultural Inputs to Ward Level

The followings are examples: the varieties of inputs included are not meant to be exhaustive (especially for seed fairs and voucher programs). The Organization should add columns to include additional inputs. Please see earlier sections of this publication for further information

**1. Assistance:** seed distribution

**Location:** Province: Matebeleland South      District: Insiza      Ward No: 17 (Tombo/Papama)

**Date:** 25 May 03

**Implementing partner:** New Frontier

**Funding source:** own source

**Status:** Distributed

**Comments:**

**No. of households:** 750

**No. of seed packs distributed:** 750

Pack contains 10 kg OPV maize, 2 kg millet, 2 kg sorghum, 10 grams pumpkin, 5 grams tomato, 25 kg ammonium nitrate fertilizer

### Quantity distributed

OPV maize (kg)	Sorghum (kg)	Pearl millet (kg)	Pumpkins (kg)	Tomato (kg)	Fertilizer, Limed AN (kg)
7500	1500	1500	7.5	3.75	18,750

**2. Assistance:** seed distribution

**Location:** Province: Matebeleland South      District: Insiza      Ward No: 4 (Mleja)

**Date:** 28 May 03

**Implementing partner:** Africa Development

**Funding source:** own source

**Status:** Planned

**Comments:**

**No. of households:** 250

**No. of seed packs distributed:** 500 (vegetable seeds distributed in a second pack)

Pack contains 5 kg OPV maize, 2 kg millet, 10 kg sorghum, 10 grams pumpkin, 5 grams tomato, 25 kg ammonium nitrate fertilizer

### Quantity distributed

OPV maize (kg)	Sorghum (kg)	Pearl millet (kg)	Pumpkins (kg)	Tomato (kg)	Fertilizer, Limed AN (kg)
1250	2500	1250	2.5	1.25	6250

*Note: It is compulsory to include Seed Pack Composition. Ward number: compulsory. Ward name: strongly requested if available*



## Appendix 9. Sample of Data Reported on District Level Input Distribution

District	HH* assisted, by district		HH assisted, by NGO		VAC report data (April 2003)		Program evaluation	
	No. of HH assisted	NGO	No. of HH assisted	Total pop	Total no. of HH	% of HH with cereal deficit	HH assisted vs total HH	HH assisted vs HH in need
<b>MANICALAND PROVINCE</b>								
Buhera	11,648	CRS/FACHIG	11,373	220,161	50,037	60%	23%	39%
Buhera		IFRC	275					
Chimanimani	12,817	HELP/ADF	5,000	111,755	25,399	54%	51%	94%
Chimanimani		German Agri-Action	571					
Chimanimani		CRS/FACHIG	4,246					
Chimanimani		FAO/SCN	3,000					
Chipinge	74,300	FOSENET/ZWB	6,485	261,395	59,408	50%	125%	249%
Chipinge		PLAN	39,325					
Chipinge		PLAN	28,490					
Makoni	33,667	FAO/GOAL	12,676	244,823	55,642	49%	61%	124%
Makoni		CRS/CTDT	3,843					
Makoni		AFRICARE	5,000					
Makoni		Oxfam Canada/ZPT	2,000					
Makoni		FOSENET/ZPT	9,623					
Makoni		HELPAGE	525					
Mutare	63,172	HELP/PLAN	19,997	217,843	49,510	58%	128%	220%
Mutare		PLAN	38,190					
Mutare		AFRICARE	4,985					
Mutasa	57,850	HELP/PLAN	41,800	160,036	36,372	54%	159%	296%
Mutasa		PLAN	16,050					
Mutasa		Oxfam Canada/FCTZ						
Nyanga	9,972	CAFOD/Cadec	8,739	113,478	25,790	53%	39%	73%
Nyanga		German Agri-Action	1,233					
<b>TOTAL</b>			<b>980,858</b>	<b>10,432,131</b>	<b>2,382,507</b>	<b>47%</b>	<b>41%</b>	<b>88%</b>

\* HH = households

## Appendix 10. Program Monitoring Plan

Objective	Indicators	Monitoring Inputs	Final Verification
By April 2004, 149,000 vulnerable farm households in 10 districts of Masvingo and Midlands provinces, have utilized an increased quantity and diversity of cereal grain and legume planting material, through provision of 2533 t of seeds and possibly 7450 t of top dressing fertilizer	% of input packs arriving at the primary warehouses intact	Review logistics records and periodically check inputs on receipt	Actual # of beneficiaries who received seed and fertilizer on time
	Quantities of inputs dispatched match the # of beneficiaries at distribution point. Proper loading and offloading	Matching quantities dispatched to the # of beneficiaries per distribution point	On a sample basis confirm actual germination percentage of seed distributed
	% transporters getting inputs to right destination, in the right quantities and at agreed times; % distributors who have signed contracts, arranged offloading and storage and received beneficiary lists and vouchers	Visit destinations and hold one-on-one discussions with distributors, note their concerns	Sample field crop stands to monitor use of seed and fertilizer as intended
	Ascertain income generated and how used by distributor	Check records of cash receipts and any invoices of business transactions	Sample beneficiary fields to assess estimated and actual yields
	% of targeted beneficiaries receiving input packs in time for 2003/04 planting season	Monitoring Officers (MOs) randomly survey beneficiaries to ascertain compliance with targeting criteria	All distributors to account for utilization of the money injected into their businesses
	% of beneficiaries reporting satisfaction with quantity, quality and variety of seed received, and suitability and effectiveness of distribution method	MOs monitor voucher distribution to measure timeliness, ensure compliance with distribution lists and procedures established by the project with beneficiaries, AGENT rural traders and RMFP groups	
	% of beneficiaries cultivating seeds as intended	Field staff and MOs collect information on input utilization, land preparation, planting dates, agronomic practices, estimated yields, crop condition and constraints faced	
	Compare "better" vs "poor" farmers in order to share success stories amongst communities and promote the project	MOs undertake post distribution monitoring to assess utilization of seeds and fertilizer, monitor crop establishment and growth	
	Assess production levels and use of additional production derived from inputs package	MO and field staff assess production levels, storage, what quantities are marketed	
		External consultant undertakes final project evaluation	

## Appendix 11. Sample of Post-Planting Assessment Survey Questionnaire

This survey can provide information on whether the household received relief inputs, how these were used, and the alternative sources of supply of these inputs. This information helps assess the relative contributions of relief inputs to crop production.

Date: \_\_\_\_\_ Enumerator: \_\_\_\_\_  
 Province: \_\_\_\_\_ District: \_\_\_\_\_  
 Ward: \_\_\_\_\_ Village: \_\_\_\_\_

*Respondent should be an adult who is a main decision maker for this household. If husband and wife jointly manage farming activities, both should be interviewed together. Participation of the wife should be encouraged.*

### Respondent and household details

Name of respondent	Status	Gender	Age	Years of education	Residency	Health status*
	Male HH head=1 Female HH head=2 Other (specify)=3	Male=1 Female=2			Full time=1 Part Time=2	Good=1 Fair=2 Poor=3

\* Health status: good = little or no sickness fair = sick approximately 15-40 days per year poor = sick more than 40 days per year

1. How many residents live in this household (including respondents listed above)?

	Full time (9 months or more)	Part time (2-8 months)
Adults (15+ years)		
Children (0-14 years)		

## Inputs received

2. Did you receive any seed from outside agencies this cropping season? \_\_\_\_\_ Yes=1, No=2 **[If NO, go to Q4]**

3. What seed did you receive, and from whom?

What agency provided the seed	When was it provided (week/month)	Where was it provided	How far is this from here (minutes walk)	Crop	Variety	Quantity	Units	Any problems with this seed?
				Maize=1 W sorghum=2 R sorghum=3 P millet=4 Groundnut=5 Cowpea=6 Other (specify)=7	Provide name or Unknown=9		kg=1 Other (specify)=2	None=1 Poor germination=2 Variety unknown=3 Crop unknown=4 Mixed variety=5 Other (specify)=6

4. Did you receive any chemical fertilizer from outside agencies this cropping season? \_\_\_\_\_ Yes=1, No=2 **[If NO, go to Q6]**

5. What types of fertilizer did you receive?

What agency provided the fertilizer	When was it provided (week/month)	Where was it provided	How far is this from here (minutes walk)	Type of fertilizer	Quantity	Units
						kg=1 50 kg bag=2 Other (specify)=3

## Crops and crop management

6. What have you planted this season and how have you managed these crops?

Plot #	Crop	Planting date (week/month)	Variety #1 (include local names)	Source	Kg of Var # 1 planted	Variety #2 (include local names)	Source	Kg of Var # 2 planted	Kg of manure applied	Kg of basal fertilizer applied	Kg of top-dress fertilizer applied
	Maize=1 W sorghum=2 R sorghum=3 Pearl millet=4 Groundnut=5 Cowpea=6 Other (specify)=7			Own stock=1 Neighbor=2 Distant relative=3 Retail shop=4 Grain market=5 NGO (give name)=6 Other (specify)=7			Own stock=1 Neighbor=2 Distant relative=3 Retail shop=4 Grain market=5 NGO (give name)=6 Other (specify)=7				

## Seed sales, gifts, barter, stocks, consumption

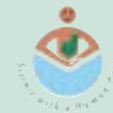
7. Do you still have any seed in stock? \_\_\_\_\_ Yes=1, No=2
8. Did you sell, trade, barter or give away any seed this season? \_\_\_\_\_ Yes=1, No=2
9. Did you consume any of your seed, or the seed you received from NGOs, this season? \_\_\_\_\_ Yes=1, No=2
10. **[if the answer to Q7, 8 or 9 is yes]** What did you do with the seed you did not plant?

Crop	Seed source	Transaction	Quantity	Price	Reason
Maize=1 W sorghum=2 R sorghum=3 Pearl millet=4 Groundnut=5 Cowpea=6 Other (specify)=7	Own stock=1 Neighbor=2 Distant relative=3 Retail shop=4 Grain market=5 NGO (give name)=6 Other (specify)=7	Sale=1 Gift =2 Barter=3 Consume=4 Still in stock=5 Other (specify)=6	state units	If sale/barter – for entire transaction	Excess to need=1 To help another farmer=2 To earn cash=3 Did not like variety=4 Unable to plant=5 Other (specify)=6

Thank the respondents and ask if they have any questions. Record these.



## About ICRISAT



The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is a non-profit, non-political, international organization for science-based agricultural development. ICRISAT conducts research on sorghum, pearl millet, chickpea, pigeonpea and groundnut – crops that support the livelihoods of the poorest of the poor in the semi-arid tropics encompassing 48 countries. ICRISAT also shares information and knowledge through capacity building, publications and ICTs. Established in 1972, it is one of 15 Centers supported by the Consultative Group on International Agricultural Research (CGIAR).

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