SEED SYSTEM SECURITY ASSESSMENT

ZIMBABWE

An assessment funded by:

**The United States Agency for International Development/
Office of Foreign Disaster Assistance**

July 2009

CIAT
Centro Internacional de Agricultura Tropical
International Center for Tropical Agriculture
Consultative Group on International Agricultural Research

USAID

CRS
CATHOLIC RELIEF SERVICES

CORE RESEARCH TEAM

International Center for Tropical Agriculture (CIAT)	Louise Sperling Enid Katungi Frank Tembo Pauline Hobane (Consultant)
Catholic Relief Services	Geoff Heinrich Wilfred Munguri Urayayi Mutsindikwa Cartsens Mulume
World Vision	Rhodes Ndlovu
CARE	Munyaradzi Mubaiwa Nhamo Mucheta
AGRITEX	Dave Masendeke
USAID/ OFDA	David Chikodzore
CIMMYT	Peter Setimela
SOFECSA	Paul Mapfumo Hatirarami Nezomba
FAO (background data)	Douglas Magunda Jacopo D'Amelio Kudzayi Kariri

Acknowledgements

Support from the Office for Foreign Disaster Assistance of the US Agency for International Development made this work possible. We greatly appreciate the financial backing, and intellectual contributions of Julie March, Laura Powers and Eric Witte, in Washington, D.C. and of Jan Wessel and Mark Adams in Harare. CRS/Zimbabwe provided the much needed logistical support.

The insights of many people shaped this work: seed companies, agro-dealers, men and women farmers, local seed producers, government ministry personnel, crop and livelihood specialists and others (see also list of persons contacted). We thank all those who shared past and current information, and who reflected on how best to move forward in the near future. These are promising times in Zimbabwe. We hope the positive opportunities for seed system support are seized upon soon and with vigor.

Acronyms

AGRITEX	Agricultural, Technical, and Extension Services
CBI	Crop Breeding Institute
CF	Conservation Farming
CIAT	International Center for Tropical Agriculture
CGIAR	Consultative Group on International Agricultural Research
CIMMYT	International Center for Maize and Wheat
CRS	Catholic Relief Services
CTDT/COMMUTECH	Community Technology Development Trust
DA	District Administrator
DAEO	District Agricultural Extension Officer
DFID	Department for International Development
DR&SS	Department of Research and Specialist Services
DSD	Direct Seed Distribution
ENDA	Environment and Development Activities (an NGO)
FAO	Food and Agriculture Organization of the United Nations
FFS	Farmer Field School
GMB	Grain Marketing Board
GNU	Government of National Unity
GoZ	Government of Zimbabwe
IARC	International Agricultural Research Center
ICRISAT	International Crops Research Institute for Semi-Arid Tropics
KEP	Kalahari Early Pearl
LDS	Lutheran Development Services
MoA	Ministry of Agriculture
NGO	Non-governmental Organization
OPV	Open Pollinated Variety
ORAP	Organization of Rural Associations for Progress
OVC	Orphan and Vulnerable Children
PRP	Protracted Relief Program
RBZ	Reserve Bank of Zimbabwe
RDC	Rural District Council
SADC	Southern Africa Development Community
SMIP	Sorghum Millet Improvement Project
SOFESCA	Soil Fertility Consortium for Southern Africa
SPR	Seed Protection Ration
SSSA	Seed System Security Assessment
SVF	Seed Vouchers and Fairs
USAID/OFDA	United States Agency for International Development/ Office of Foreign Disaster Assistance
WVI	World Vision international
ZAR	South Africa Rand
ZFC	Zimbabwe Fertilizer Company
ZFU	Zimbabwe Farmers Union
ZNA	Zimbabwe National Army
ZSTA	Zimbabwe Seed Trade Association

Table of Contents

Acknowledgements ii
Acronyms iii
Table of Contents..... iv
List of Boxes..... v

EXECUTIVE SUMMARY..... vi

Seed System Security Assessment Highlights vii
Specific Recommendations xiv

I: Introduction 1

II: Background to Seed Security and Aid Response 3

III: Methods 8

IV: The Stress Context 16

V: Seed Systems in Zimbabwe: Overview 30

VI: Field Findings: across Sites 54

VII: Field Findings and Recommendations: site by site……80

Seed System Security, July 2009: Murehwa District..... 81
Seed System Security, July 2009: Bikita District 94
Seed System Security, July 2009: Tsholotsho District..... 108
Seed System Security, July 2009: Beitbridge District..... 122

VIII: Overall Recommendations: across sites 134

IX. References..... 141

X. Annexes 146

List of Boxes

Box 1. Seven basic steps in assessing seed system security

Box 2. Local barter terms for seed, draught power and fertilizer

Box 3: Are OPVs really inferior to maize hybrids?

Box 5: Coping or Crippling Strategies?

Box 6: Are these really women's crops?

Box 7. How direct seed aid is killing the agro-dealer business

Box 8: CARE- AGENT Program

Box 9: Managing 'potential' seed

Box 10: Can farmer seed production experts contribute more to regional seed security?

Box 11: Groundnut seed: why is multiplication so difficult?

Box 12: Do farmers really eat seed?

Box 13: How many buckets for a bag? Trading sweet potato for fertilizer

Box 14: Cost of production: is it really worth planting maize in 2009/10?

Box 15: How the currency changes affects farmers' agricultural decisions

Citation: CIAT, CRS, World Vision, Care, AGRITEX and CIMMYT, 2009. Seed System Security Assessment, Zimbabwe. A study funded by the United States Agency for International Development. Office of Foreign Disaster Assistance. in July 2009 Rome: International Center for Tropical Agriculture.

Comments and updates are welcome by the SSSA team. Please contact the assessment coordinator at l.sperling@cgiar.org.

EXECUTIVE SUMMARY

This report presents the results of a Seed System Security Assessment in Zimbabwe, implemented during July 2009.

A seed system security assessment (SSSA) reviews the functioning of seed systems which farmers use, both formal and informal. It assesses whether seed of adequate quality is available and whether farmers can access it. The approach also promotes strategic thinking about the relief, recovery or development vision needed. For instance, during the stress period, should aid aim to restore the system as it was, *ex ante,* or aim to strengthen it? A SSSA goes well beyond a conventional seed needs assessment as it hones in on specific seed security problems communities face, and then steers response to actions which alleviate specific constraints, and often improve systems. (For full description of method, see http://www.ciat.cgiar.org/africa/pdf/sssa_manual_ciat.pdf).

Four sites were chosen for the assessment : Murehwa , ward 14 (natural region IIB); Bikita, ward 15,(natural region III); Tsholotsho, ward 12 (natural region IV); and Beitbridge, ward 10 (natural region V). The sites include zones where participating non-governmental organizations (NGOs) were prepared to address seed security-related constraints and opportunities. The four selected sites also represent well the cross-section of the regions in which Zimbabwean agriculture and seed aid continue to unfold. Murehwa is a prime maize zone in a higher potential region, Tsholotsho and Bikita are largely small grain zones, in which maize is also grown. Beitbridge is at the edge of where agriculture is viable.

The full report presents the seed security findings and recommendations specific to each site, as well as findings and recommendations which emerged across sites. In this summary, we focus on the across-site results as these may have broader relevance to areas in Zimbabwe where seed security responses are currently being planned.

Note that this assessment coincided with a period when preparations by donors and NGOs were well advanced for distributing substantial seed (mainly hybrid maize) and fertilizer aid to at least 600,000 farming families, or about half of the Zimbabwe farming population. At the same time, rural businesses, including agro-dealers that had closed shop during the price control enforcement, were beginning to revive. The synopsis of the findings are that (i) farmers are generally seed secure and have developed resilient community seed sourcing mechanisms during stress periods when seed was not available or affordable and that (ii) massive direct seed aid to farmers will hurt agro-dealers and 'short circuit' a natural business progression relationship between seed houses, agro-dealers, rural traders and the farmers. The team recognizes the need for assistance, particularly in terms of increasing farmer and community buying power and injecting currency into local economies. However, we propose delivery mechanisms that give farmers the opportunity to choose (and strategize) and which that do not hurt rural business or agro-dealers and eventually hurt farmers – e.g. aid interventions such as vouchers and subsidies for transport. These interventions require logistical prudence but are geared towards assisting the recovery process that has already begun. Farming families depend on rural traders not only for seed and fertilizer purchases, but also as buyers for their farm produce.

Select SSSA findings are summarized in the section directly below. Recommendations then follow.

SEED SYSTEM SECURITY ASSESSMENT HIGHLIGHTS

Smallholder farmers in Zimbabwe use both formal and informal seed channels for procuring their seed, and both merit explicit attention in any seed security assessment.

Formal seed sector

- Zimbabwe has been long known for having an unusually well developed national seed industry: when functioning well, over 15 companies produced and marketed seed of over 20 different crops. (Key companies include SeedCo, Pannar, Pioneer, Agri Seeds, National tested Seeds.)
- Maize is, by far, the most important focus of breeding and seed sector efforts and the only important food crop for which small farmers are dependent on the formal seed industry. Some 101 maize hybrid varieties were released in the period 1970-2007, and 8 open pollinated varieties (OPVs) during the years 2003-2008. Despite, increasing breeding efforts on OPVs, the Zimbabwe seed industry still focuses heavily on hybrids. At the time of the SSSA, a single company, Agri Seeds, had OPVs (ZM521) on offer.
- In the past, commercial seed companies have also sold seed of other crops, but these have been a minor focus relative to maize. Some of the commercial crops for which seed has been previously sold include: wheat, barley, sunflower, soybeans and cotton. Staple food crops for which seed of improved varieties was also previously sold include sorghum, peal millet, cowpeas and groundnuts.

Trends pre-liberalization

- Between 2006/07 and the beginning of 2009, the formal seed sector nearly shut down due to price controls, inflation currency constraints, and an unfavorable policy/ regulatory environment. Seed production within country was extremely limited, and essentially all retail seed outlets closed. More specifically:
    - Seed companies had concerns about price. Prices (especially for maize and wheat) were fixed by the government, which made it un-profitable for the out-growers to produce seed and sell it to the companies. There are also concerns that any seed produced could be requisitioned by government, at any time, to support large scale inputs distribution programs.
    - With land reform and the loss of the large-scale commercial farmers, seed companies have had to establish new networks of out-growers. These new seed producers have required time to gain the necessary experience and expertise. They also farm much smaller amounts of land, which means seed companies have had to contract more growers, and this has significantly increased their transaction costs.
    - Before the introduction of the use of the US dollar, the inflationary environment made doing business in general extremely challenging. For example, the price of 25 kgs of maize was 4313 Zimbabwe dollars in July 2003 and 250000000 Zimbabwe dollars in July 2008.

Current trends- with liberalization

- With liberalization of the regulatory/policy environment and introduction of US$/ZAR (Rand) in the first quarter of 2009, most seed houses have been expanding grower networks and are re-opening retail outlets.
    - Seed houses have been significantly scaling up production in-country, For instance, in the 2008/09 season, Pioneer produced at least 4000 mt of hybrids in-country , and Agri Seeds between 5000 -6000 mt (up from 1200 mt in 2007/08). It is not possible to get precise figures on total supplies available for the upcoming season, as: a) seed companies prefer not to divulge figures on stocks now in country; and b) certified supplies for sale to Zimbabwe farmers can come from seed house branches in neighboring countries, particularly South Africa and to a lesser extent Zambia. Discussions with seed houses suggest that they can import very significant quantities with only 4-weeks' notice.
    - Agro-dealers were open in every city, town and growth center visited during the assessment. New outlets even opened during the course of the field assessment, indicating that the next few months could be a dynamic period of transition: e.g. a SeedCo outlet opened its doors in Murewha on July 10, 2009. Anticipating expanded business, not only were agro-dealers selling seed and fertilizer, but so were general delivery stores, and many non-specialty shops, such as grocers and clothes stores, which would put 5-10 bags of inputs on offer.
    - The amount of stocks available for sale in July 2009 was impressive for the time of year, many months before sowing and well before farmers' main period seed purchases in September and October . At that time, established agro-dealers had generally upwards of 15T maize for immediate sale, with the majority indicating that these were just initial stocks, which could be replenished when, or if, depleted.
    - Dealers generally assessed farmer buying patterns as quite positive. In Masvingo, for example, Masvingo Farm Supplies (MFS) had sold 8T maize immediately upon opening in March 2009, while N. Richards, had sold 15T in one week mid-July and had ordered another 15T to arrive the following week. Anticipating farmers' limited access to US$ currency, dealers are making available smaller packets on inputs: two, and particularly five and 10kg packs of maize and fertilizer, along with the normal 20 and 25 kg packs.
    - Innovative efforts have been catalyzed to extend the reach of agro-dealers. Starting from 1995, CARE International in Zimbabwe has supported an 'Agribusiness Entrepreneur Network (AGENT) program, a network of community-based agents which sell agri-inputs and allied products to smallholder farmers. The program has trained over 800 agents and at its height covered five provinces and 33 districts. Basically, the work brings a network of retail shops much closer to its rural buyers. Currently the program is active in Masvingo and the Midlands and has 106 trader agents. CARE not only provides services to farmers through supporting such trader agents, but equally enhances agents' own business skills, loan prospects and entrepreneurial opportunities.
    - Agro-dealers were optimistic but expressed concerns over staying open during this critical period. Masvingo Farm Supplies (MFS), the largest agro-dealer in the province (Masvingo), provides a compelling example. At its peak, MFS had 14 branches and moved over 210T of maize seed each season, serving over 100,000 commercial and communal farmers with agricultural inputs. August 2008, MFS

closed its doors and let all 150 employees go. They re-opened March 2009, with 15 staff only, but now have hopes for renewal.

- Many dealers expressed dismay over the upcoming free direct seed distributions (DSD). Even if free seed is provided only in November 2009, hearing about the prospect of such aid can change farmers' buying patterns immediately---even five months earlier, in July 2009. Evidence for such anticipatory behavior came from the Murehwa site, where in 2008/09, 50% of farmers in the district planted maize late, as they delayed sowing until the free fertilizer came, in mid December
- In terms of bolstering agro-dealers, two immediate challenges became apparent during the SSSA;
    - To get inputs for sale into the regions, to agro-dealers (versus only to centralized relief agencies procurers);
    - To encourage farmers to buy inputs now , knowing that free seed and fertilizer will be distributed in massive quantities later in the year.

In brief, the formal seed sector in Zimbabwe has been very badly affected by the massive inflation that existed over the last 10 years, and by a very difficult economic and policy environment that prevailed during the same time period, and which has been particularly un-favorable in the last three years. However, in the first half of 2009 things have greatly improved (legalization of use of the US dollar for trade in-country and removal of restrictions on input and output markets). Most of the major seed companies are also still functioning in Zimbabwe, albeit at much reduced levels compared with 10 years ago. So there is now an important opportunity to re-establish the formal seed sector and related retail market networks in the country. This potential recovery is still fragile, and needs to be encouraged with appropriate support. The right kind of relief programs at this time – ones that promote rather than compete with the formal seed sector and retail networks – could be extremely valuable in jump-starting the recovery.

Informal sector

Sorghum, pearl millet, groundnuts, cowpeas, Bambara nuts, sugar beans and sweet potato constitute the bulk of crops that are important in the informal seed sector in Zimbabwe. Others include open pollinated maize varieties, soybeans, sunflower, white beans and finger millet. Except for maize, the informal sector supplies over 95% of the seed Zimbabwe farmers sow. Informal sector crops are also are key for production stability and nutrition, and many are loosely identified as 'women's crops'. Due to the collapse of the economy and the resultant shortage of maize seed in formal markets, hybrid maize has also made inroads into the informal markets. Hybrid maize bought in 10kg, 20kg, 25kg or 50kg packs is repackaged into smaller packets of 2kg and 5 kg and sold in the informal venue – from trucks or open market stalls, or from others who have obtained it, e.g. employees of some seed companies who were paid in seed bags, rather than currency.

Overall, the assessment team found the informal sector function well: being both resilient and dynamic. There was an impressive amount of processing within communities, to add value to basic agricultural products and especially to generate income. All major crops could potentially undergo transformation into saleable products. Also a number of processes have served to keep the informal sector dynamic and supplied with an injection of new varieties:

processes such as participatory variety selection, on-farm trials, cross-border trade, seed fairs.

The 2008/09 season: overview

- Informal sector supplies are abundant after the 2008/09 season.
    - The 2008-09 harvest was a good one, as assessed by all four farming communities, and supported by the Ministry of Agriculture Crop and Livestock Assessment Mission. Following on a 'bad' year, maize production 2008-09 was 160% more than that of 2007-08; and the 2008-09 combined small grains was 190% more than the previous year (and 110% more that the recent five-year national production average) (Ministry of Agriculture, Mechanisation and Irrigation Development, 2009).
    - Social networks of exchange remain strong and continued to function during the 2008-09 season, providing 10 to 38% of the seed sown of maize, groundnut, finger millet, cowpea, sorghum, pearl millet and Bambara nut. It is impressive that such extensive gift-giving took place, just after the 'bad season of 2007-08.
    - Open markets in all sites visited had good supplies of a large variety of crops, many of which constitute 'potential seed'. Part of the abundance was attributed to a good harvest and part due to improved access to fuel and transport facilities which helped agricultural produce move. Overall, the quality of potential seed on offer generally looked good to excellent: the legumes in particular were full grained, generally sorted to a single variety (except cowpea), free from inert material and with little evidence of damage in storage.
- The big surprise in the informal sector was an abundance, not a lack. This abundance was most apparent where local level seed production has been given special technical and organizational support, particularly in the Tsholotsho region. In Tsholotsho, Farmer Field Schools (FFS) produced 155 mt pearl millet, groundnut, sorghum and cowpea during the 2008/09 season These FFS groups ask that outside agencies purchase their FFS-produced seed- rather than give outside seed aid. While FFS groups have mastered the seed production techniques, they need help in identifying markets and to build their agro-business expertise more generally.

The 2008/09 season: specific seed sources

- Individual farmer assessments of the 2008/09season, showed the majority in the SSSA sample appreciated the varieties they sowed—and the seed condition.
- In terms of seed sources for the 2008/09 season, seed obtained from farmers own stocks or through social networks was key across crops; agro-dealers and local shops were particularly important sources for maize seed, and local markets for the legumes, especially groundnut and Bambara nut. Development interventions were a significant seed source only for maize (13.6% of total seed supply) and much of this was obtained through the government program of Operation Maguta. Within the SSSA sample, food aid and seed aid together provided just over 1/10 of the maize seed (and some of this was probably also Operation Maguta) . Figures are 2.4% and 8.1% for food aid and seed aid respectively.

In sum, farmers used a diversity of channels and multiple strategies to access their seed for the 2008/09 season: most involved use of their own local channels and even during this economically volatile period, farmers found ways to barter and buy at significant levels. Development and emergency aid together provided only a quarter of the total maize seed sown in 2008/09.

Community Assessment of seed security and prospects for the 2009/10 season

Community groups assessed their own seed security for their three most important crops (as prioritized by the community). Seed security was defined as either having the seed already in hand, or being able to access the seed with some certainty (though purchase, barter, gift, or other).

- Communities themselves were quite positive in their overall seed security assessment. For small grain seed, all could meet 100% of their seed needs. In two the four sites, communities signaled groundnuts as a potential problem for about a quarter of families, depending on the supplies to on offer in open markets at sowing time (and groundnut was the only crop for which communities signaled ongoing availability problems—due to challenges associated with its seed multiplication.) The community assessment for maize seed security was very good: 90-100% of households have in stock or indicate they can access the seed they need, mainly through direct purchase.
- Such community assessments correlated to a high degree with the quantitative findings from the 165 individual interviews. In quantitative assessments , farmers indicated they had clear possibilities for obtaining 100% of their seed requirements for all crops, except for groundnut (in which they quantified they could reach 93% of their requirements)
- For the 2009/10 season farmers indicate they will use the following sources to obtain seed
    - For the small grains, farmers are counting mainly on their own stocks, supplemented by purchase at local markets. For the legumes, again, home-saved stocks and open markets will be used, with local markets being a main source particularly for Bambara nut. Cowpea, in Murehwa is an exception as the crop is relatively new and farmers still expect outside assistance from the NGO, World Vision especially for new varieties.
    - For maize, farmers have retained some stocks (recycled and carryover), but aim to purchase the bulk of the seed from agro-dealers: they sense such a strategy possible. Farmers are optimistic they can obtain cash needed for maize purchase. At the time of the assessment, it was not possible to confirm that all cash needed for maize purchase by farming families was available as the sale of the 2008/09 crops was ongoing: it is mainly from harvest sales that farmers expect to generate seed money.
    - Relatively few farmers are counting on emergency aid for seed for 2009/10. This could likely change as during the course of the assessment in July, newspapers were already starting to advertise the upcoming free distributions.

- Reviewing the overall evidence (qualitative and quantitative data), the SSSA team would be slightly more conservative than the community in assessing seed security. Particularly for maize, we would put figures of 'maize needy', at around 10% or a high of 15% , with the bulk of the needy coinciding with those who are chronically poor. (So the issue would be purchasing power, not lack of seed *per se.*)

  This 10-15% figure for maize-related aid is based on a assumption that other farmers will have the opportunity to themselves acquire needed inputs. This implies that input supplies of seed and fertilizer will continue to reach rural shops in important quantities.

Fertilizer and costs of inputs

Fertilizer assessments were not done extensively. Communities themselves raised access to fertilizer rather than to maize seed per se, as the major constraint, mainly due to its unusually high cost

- During the July 2009 assessment, fertilizer supplies were starting to be put in both agro-dealer and general delivery stores. Neither agro-dealers nor farmers cited availability as a central issue with fertilizer. Rather price was the compelling constraint and particularly the terms of trade. Using barter economy rates, the price has gone up five-fold in but two to three years. For instance, in Murehwa a 50kg bag used to cost 3 buckets of sweet potatoes; in July 2009, it cost the equivalent of 15 buckets.
- Quick calculations of costs of inputs give a sense of the current, exorbitantly high, costs of inputs—in relation to funds received for harvest sale. Direct inputs to plant an acre of maize—only the seed and fertilizer—will cost the farmer at least $112 US. On the open local market, farmers will receive but $166 US, he/she harvests at least 1500 kgs.

Money/Purchasing power

The overwhelming issues in terms of seed security—did not directly relate to seed at all. The critical issues across sites revolved around money and purchasing power. Prices for inputs were high, and farmers felt they were not getting adequate costs for their produce (which at the time of the assessment was just at the point of sale—to generate needed liquidity

- The change to the new was welcomed by many as it has relatively stable value and help to stimulate the return of goods onto shelves.
- However the move to the US$ has also brought a number of distinct disadvantages. As there is basically no change available (nothing under US$1), prices are being inflated up to the higher units. Also, getting currency notes, the FOREX, either to farmers individually, or into local commerce, has taken more time than will be expected. Farmers also do not have an intrinsic sense of the currency and particularly how their produce should be valued in the new FOREX. Even open market traders were quite unsure on how the currency change itself will affect prices for inputs as sowing season arrives.

In brief: the issues related to money are multiple, and distinct. They include:

- lack of actual currency notes in rural areas (individually, and in commerce)
- lack of change (small money) associated with the currency- which in itself leads to higher unit costs (as merchants round up)
- lack of farmer purchasing power, especially in relation to low prices received for produce
- Unfamiliarity with value of currency, including uncertainty of how the new notes in themselves will affect open market prices

Seed security summary

In terms of seed *per se,* the only critical issue found during the SSSA is related to formal seed and input sector functioning. Given the last few years of policy challenges (especially price control, and currency value breakdown), this sector will take time to recover. However, even during the short period of the field SSSA, agro-dealers were starting to open their doors, general delivery dealers were starting to stock packets and even non-specialty stores (food stores, clothes shops) were starting to stack 5 and 10 bags here and there. Evidence clearly shows that this sector is starting to put supplies on offer--and farmers already buying. One immediate challenge related to the formal sector supply, and specifically to agro-dealers, is to make sure they remain open and do not fold again.

Fertilizer assessments were not done extensively. Communities themselves raised access to fertilizer rather than to maize seed per se, as the major constraint, mainly due to its unusually high cost. SSSA team calculations reinforce the community assessment of the relatively high costs of production, and especially of fertilizer, in relation to remuneration received for maize sale.

The SSSA found that the overriding problem around the issue of seed security, and the functioning of seed systems more broadly, had little to do directly with seed at all. Immediate and key constraints revolve around money and purchasing power: the terms of trade for farmers have escalated enormously; farmers were just starting to market produce and were concerned about low remunerations ; there is little actual cash (and particularly $US currency notes) in rural economies.

As the next section moves toward making recommendations, we underline here the prime challenges for addressing seed security concerns at this highly fluctuating time in Zimbabwe:

- To restart and reinforce the formal sector supply—supporting not undermining fledging efforts; and
- To inject cash into local economies

These two big challenges should help shape immediate seed security interventions across and within the sites of assessment.

SPECIFIC RECOMMENDATIONS

A full set of recommendations appears in section VIII of this report. Recommendations are divided into those for the very short term (now), versus recommendations for the short to medium term (i.e., within the next few seasons). In this summary, we focus on recommendations specific to formal and informal seed sector functioning, and to methods of seed security assessment.

Formal Seed Sector Strengthening During Emergency and Early Recovery

Agro-dealers are critical conducts through which farmers obtain maize seed, fertilizer and other specialized agricultural inputs. They can only serve small farmers if: a) they continue to exist, b) have supplies, c) are situated in some proximity to farming communities, and d) offer products at prices which farmers can afford. The Relief Seed Business is threatening to compromise attributes a and b, and incentives or subsidies have to be put in place to address issues c and d.

Very short term

6. **Recommendation:** In the immediate months, all efforts must be made to sustain, not undermine, agro-dealer business during this tenuous financial period. A good number are just starting to re-open their doors, and it is a 'make or break' period for them.

<u>Specific recommendations linked to 6</u>

6.1 If emergency maize and/or fertilizer are to be given as part of relief programs such distributions should be done via a voucher system linking farmers to agro-dealers stores or to agro-dealers selling at seed fairs.

Such a move will help support business recovery, get farmers access to preferred varieties and inputs, and help to inject cash into the local economy.

6.2 Agro-dealers need to be encouraged to sell closer to farming communities, and growth center areas. Transport costs mean that rural farmers may pay 30-50% more for the same bag of seed sold in the bigger towns. In the short-term, aid organizations might consider adding a transport cost into any voucher program.

6.3 Agro-dealers linked to seed aid programs should be encouraged to package seed and fertilizer products in sizes farmers have potential to access. While the assessment team saw 1 kg packages of both (re-packed) we suggest seed sizes of 5 and 10 kg (with 2 kg on offer in small quantity) and fertilizer in 5 and 10 kg packs and upwards.

6.4 Efforts should be made (by donors? government? UN agencies?) to ensure that regional and local agro-dealers can receive adequate stocks to sell. This might be an issue of reorienting the overall supply away from bulk relief

aid purchase. Mechanisms should also be explored for helping local dealers to receive stocks on consignment or through some credit guarantee arrangement.

Short to medium term

7. **Recommendation:** The 'normal' network of those selling certified maize seed, fertilizer, and other specified inputs needs to be expanded and brought closer to farming communities on a continued basis. Formal agro-dealers may not find it lucrative to set up shop in less populated and removed areas. Programs such as CARE's 'trader agents' in Masvingo have served in the past to broaden agro-supplier coverage. (Note: similar programs have unfolded in neighboring Zambia, The Profit Program) Recommendation: The traders agent networks, such as those supported by CARE, should re-vitalized and replicated so as to serve even those in more remote areas.

8. **As a general recommendation, across the board:**, Incentives need to be put in place to encourage agro dealers and trader agent suppliers to become more small farmer client oriented. Client-oriented means putting seed on offer early (July/August rather than October/November), offering farmers preferred crops varieties and fertilizers, packing in affordable sizes, and selling at points accessible to local farming populations.

INFORMAL SEED SECTOR STRENGTHENING DURING EMERGENCY AND EARLY RECOVERY

The informal seed sector provides the majority of Zimbabwe farmers' seed: small grains, pulses and tubers. (Important exceptions are seed of maize, wheat and horticultural crops). The informal sector needs to be strengthened so as to provide farmers easy access to improved varieties, deliver a good quality seed, and to professionalize the processes of seed production, marketing and rural agro-enterprise more generally. A healthier informal seed sector will translate into a much healthier rural economy.

Very short term

9. **Recommendation:** emergency support programs linking with the informal as well as formal sector should concentrate on alleviating seed access problems. Seed fairs with vouchers, vouchers linking farmers to agro-dealers (cited in point 7) and direct cash transfers are all examples of possible aid options which might give farmers increased access to crops and varieties of their choice.

<u>Specific recommendations linked to 9</u>

9.1 In terms of seed-related issues, *seed voucher and fair operations might best be designed to respond to specific needs of farmers at this moment in time*. Access to groundnut seed, and seed of new, especially early maturing varieties, have been cited at various sites as key farmer-sought inputs. Seed fairs might make extra efforts to engage local and regional agro-dealer

suppliers to put on offer modern varieties. Formal sector suppliers might require a transport premium to take part in these rural events.

9.2. Non-seed agricultural inputs also were cited at the forefront of farmer needs in the assessment: fertilizer, labor, draught power. Seed fairs might insure that both basal and top dressing fertilizer bags appear on offer in any fair event, and in farmer-friendly sizes. Use of vouchers to gain access to labor and draught power might also be explored.

9.3 Graduated vouchers might be usefully employed in the upcoming emergency programs. Basically, graduated vouchers give varied levels of aid and help to distinguish between the very poor, and those who need a bit of extra help in this time of financial and currency fluctuation. Graduated vouchers can help lessen dependencies, as only those near the bottom of the spectrum should receive substantial free support. Average income farmers (again, somewhat cash insecure) might receive vouchers to cover but parts of their agricultural needs.

9.4. Giving cash aid as direct assistance might seem unwise at this point in Zimbabwe, where the whole economy is severely cash-strapped. However, small cash trials could help farmers access their own priority needs, which may include agricultural inputs.

Short to medium term

There is a strong need and opportunity to professionalize and strengthen informal sector seed production.

10. Farmer groups (and individual entrepreneurs) require support to ensure good quality seed supplies of what are referred to as the non-commercial or orphan crops (basically everything but maize, wheat and horticultural crops). This support implies efforts on multiple thrusts, and needs to be done professionally. Seed production will not succeed unless it is tied to real demand and sustainable market development. **Recommendation:** Significant effort and funds should be allotted to increase informal seed production capacity and marketing channels.

<u>Specific recommendations linked to 10</u>

10.1 Local community groups need enhanced capacity in the techniques of seed production. Farmer Field School experience shows that better isolation distances, variety sorting, improved agronomic practices, improved storing and storage techniques can lead to greater availability of good quality seed at the local level. Groundnut seed, in particular, requires enhanced local level capacities.

10.2 Farmer groups, whether for seed or food sale, should only be encouraged to produce crops if clear markets have been identified, and general agro-enterprise/ marketing skills enhanced. Market skill enhancement and market identification has to be the driving force shaping local production initiatives.

10.3 New, modern, farmer-acceptable, and market preferred crops and varieties have to feed on a continuing basis into local production systems, both to boost yields and enhance marketing possibilities. Across sites, only new maize varieties enter farming system with regularity—except when special aid of development programs bring in new cowpea or sweet potato or pearl millet types. Recommendation: Links have to be professionalized and sustained to promote variety innovation at the local level. Farmer Field Schools (FFS), Participatory Variety selection, new variety small packet sales might all help to raise awareness of and access to new needed varietal materials.

10.4 Production of foundation seed has to be intensified across of range of non-commercial crops, to form the base of an extensive, decentralized, seed production system. The production of such foundation seed should squarely rest with the national research institution `DR&SS. (This is not an appropriate or sustainable international agricultural center function).

In brief, we are recommending the development of a market driven local seed production model, which scales up foundation seed and then decentralizes seed production in scores of zones country- wide. Supply has to respond to demand, meaning that hard to produce crops (e.g. groundnut) and new desired varieties have to drive the production process.

11. Local markets are important for farmers' seed supply, particularly for the pulses. More attention should be given to encouraging that these open seed/grain markets supply the kinds of potential seed farmers need. As a point of departure, seed/grain traders could be powerful partners in helping to move *new modern varieties* widely, within and among farming communities. **Recommendation:** Strategies should be tested for directly linking formal sector seed supply with informal trader seed/grain sellers. Among the approaches that might be tested and evaluated are a) the distribution of variety samples (to stimulate demand); and b) the sale of small packets of modern varieties and improved seed at open market venues.

PROMOTING ACCURATE SEED SYSTEM SECURITY ASSESSMENTS

Classic seed need assessments inevitably conclude that 'seed is needed' and that the response should take the form of direct seed distribution. While innovative at their inception (as they distinguished seed aid need from food aid need), such assessments are now outdated, inadequate and should be significantly modified, and urgently. Understanding of what happens to seed systems during disaster has become markedly more refined in the last five years and we have learned that *distinguishing among seed security constraints is key for recovery*. Further, analyses have shown that systems need to be analyzed to gear appropriate seed-related responses: seed systems, farming systems, markets and livelihood systems more generally.

Short to medium term

12. **Recommendation**: Seed security assessment methods have to be significantly revamped.

Specific recommendations linked to 12.

12.1 ` National and regional formats for assessing seed security status should shift from those which calculate simplistic 'seed needs' to frameworks which recognize different types of seed security problems, and which tailor responses accordingly. These problems might include diverse constraints of seed availability, seed access and seed quality, which are distinguished by their presence in the short and in the long term. The Crop and Food Assessments missions might be among the priority tools to be revised to contain a specific seed security component.

12.2 Seed security assessment capacity needs to be built at regional and local levels. Technical tools already exist to help NGO and government agricultural officials move forward on seed security assessments. An explicit technical process needs to be put in place to:

- raise awareness of seed security versus food security issues
- set up local level seed security indicators
- train local level staff (NGO and government) in seed security field assessments

12.3 Given the complexity of the stresses in Zimbabwe, "emergency' seed aid related work has to think strategically and longer-term. Assessments related to seed security, can and should incorporate more developmental elements, including Issues related to system stability, opening and strengthening of markets, and equity concerns.

This expanded focus suggests that the 'skill set of those assessing seed security' has to be considerably broadened. Minimally SSSA requires inputs from formal and informal seed sector specialists, farming system specialists, marketing professionals, and gender/ livelihood analysts. Nutritional expertise might be considered as an added bonus.

Specific recommendation: Multidisciplinary teams should be mobilized for seed system security assessments.

12.4 More generally, a political environment for 'real seed security assessment' has to be established. This is no easy task. *Technical advances in methods alone will not lead to more accurate assessments.*

Strong seed security frameworks at a national level and strong leadership, ensuring that seed security assessment is given focus (as distinct from food security and other non-food item assessment), can enable seed aid assistance in Zimbabwe to become more demand and problem driven. More accurate assessments will bolster the ability of seed-related assistance to address farmers' compelling seed security problems and to seize on important, emerging opportunities.

I: INTRODUCTION

Rationale for Report

This report presents the results of a *Seed System Security Assessment* (SSSA) in four sites in Zimbabwe. The assessment took place in July 2009 and was implemented for four reasons.

These are quickly changing times in Zimbabwe. Formal seed suppliers are starting to open shop again, after years of closure or forced sale only to government programs. The adoption of the US dollar as the currency standard, along with relaxing of economic controls, means that farmers and producers at all levels are re-assessing market opportunities. The issue is how to support and strengthen seed systems in this period of flux.

The 2008/09 season had an exceptionally good harvest, 130% over the 2007/08 maize harvest, and was a complete surprise. Vulnerability assessment specialists expected seed shortages and, instead, found unexpectedly large areas planted and giving good production. So the fundamental question was '*from where did farmers get their seed?*'

Massive aid actions are already scheduled for the upcoming 2009/10 season. International donors are providing $140 million to distribute maize seed and fertilizer to some 600,000 households, or 50% of the smallholder farming populations. Is this the correct response? Is a response of this scale needed? In-depth assessments were undertaken in four distinct farming regions-to assess the diverse seed security scenarios and then to recommend tailored actions to respond to specific constraints.

Finally, the work took place to build assessment capacity. Seed security assessment tools are linked to food security assessments, but are also quiet distinct. For example, an assessment of a production shortfall, which often leads to food gaps, in most cases does not lead to a seed shortfall. The *Seed System Security Assessment* (SSSA) in Zimbabwe was designed to give honed technical insight and to train professionals in fast-evolving seed security assessment and intervention design methods. The training lasted three weeks, and involved nine organizations.

Aims and Structure of Report

The report presents the results of the SSSA in Zimbabwe, July 2009. It includes In-depth findings for four specific wards in Murehwa, Tsholotsho, Beitbridge and Bikita as well as overview findings, applicable across sites.

Section II gives background information on the concept of seed security and options for seed aid response. Section III introduces the SSSA methodology and reviews the actual methods used in Zimbabwe, including the rationale for the choice of sites. Given the complexity of the events, a separate section, IV, outlines the various political, economic and social stress factors which potentially shape current agricultural production and marketing. Section V then provides the background for situating the specific field findings. It describes how input supply systems have been functioning, including: the formal seed sector, the informal seed sector, and fertilizer supply chain. Notes are also presented on the "Relief Seed System'.

Current coping strategies are then highlighted, along with special issues related to Gender and Seed Security.

Sections VI presents the field findings as drawn across sites, while Section VII contains the four detailed cases studies, along with the site-specific recommendations. Section VIII presents the Overall Recommendations.

The report ends with a set of references, along with annexes addressing some of the assessment-related logistical issues.

Throughout the report, boxes are inserted to highlight important experiences and to raise issues for further discussion.

We start the assessment report by emphasizing that the Zimbabwe case is not so much a complex emergency as an ongoing complex chronic stress situation---which is largely manmade. Also, events are moving quickly. Some of the assessment findings of July 2009 might not have been remarked even in February 2009, four months earlier (for instance, the opening of agro-dealers). Recognizing this dynamism, this report aims to provide a seed security assessment for a given period (post harvest 2008/09) as well as to highlight emerging trends. We are able to do this as the assessment has focused on *the functioning of seed systems*. This is distinctly different from a standard needs assessment which may calculate potential seed needs at any one point in time.

This is not an academic report: the fieldwork has been effected in a relatively short time to allow for planning of the upcoming agricultural season, starting with sowing in October and November 2009. Having said this, the assessment has aimed for consider rigor: including use of multiple methods, triangulation of results (with quantitative and qualitative data), and work with important sample sizes.

II. BACKGROUND TO SEED SECURITY + AID RESPONSE

This section presents background basics necessary for interpreting the SSSA analysis. The concept of seed security is introduced and the types of seed aid approaches used to support such security features are then presented.[1]

The Concept of Seed Security

Farm families are seed secure when they have access to seed (and planting material) of adequate quantity, acceptable quality and in time for planting. Seed security is best framed within the broader context of food and livelihood security. Helping farmers to obtain the planting materials they need will enable them to produce both for their own consumption and sale.

Achieving seed security is quite different from attaining food security, despite their obvious links. One can have enough seed to sow a plot but lack sufficient food to eat, for example during the 'hungry season' prior to harvest. Conversely, a household can have adequate food but lack access to appropriate seed for planting. Despite these important differences between food security and seed security, determinations of seed security are normally based, implicitly or explicitly, on food security assessments. This results from a lack of appreciation and understanding of seed security issues.

The Dimensions of Seed Security: a Framework

The concept of seed security embodies several fundamental aspects. Differentiating among these is crucial to promote those features that foster seed security as well as to anticipate the ways in which such security might be threatened.

The Seed Security Framework (Table 1) outlines the fundamental elements of seed security: seed has to be available, farmers need to be able to access it, and the seed quality must be sufficient to promote healthy seed system functioning.

Table 1: Seed Security Framework: Basic Elements

Parameter	Seed Security
Availability	Sufficient quantity of seed of adapted crops are within reasonable proximity (spatial availability), and in time for critical sowing periods (temporal availability).
Access	People have adequate income or other resources to purchase or barter for appropriate seeds
Quality	Seed is of acceptable quality and of desired varieties (seed health, physiological quality, and variety integrity)

source: Remington *et al,*(2002.

[1] This section draws from L. Sperling, H.D. Cooper and T. Remington, 2008

Availability is defined narrowly as whether sufficient quantity of seed of target crops is present within reasonable proximity (spatial availability) and in time for critical sowing periods (temporal availability). It is essentially a geographically-based parameter, and so is independent of the socio-economic status of farmers.

Seed *access* is a parameter specific to farmers or communities. It largely depends upon the assets of the farmer or household in question: whether they have the cash (financial capital) or social networks (social capital) to purchase or barter for seed.

Seed *quality* includes two broad aspects: seed quality *per se*, and variety quality. Seed quality consists of physical, physiological and sanitary attributes (such as the germination rate, and the absence or presence of disease, stones, sand, broken seed or weeds). *Variety quality* consists of genetic attributes, such as plant type, duration of growth cycle, seed color and shape, palatability and so on.

In a stress situation it is very rare to have constraints in all three seed security features at the same time. So the challenge is to hone in on the real problem- and then to target alleviating action.

Acute and chronic seed insecurity

Analysis of seed security requires also consideration of the duration of the stress: whether it is 'acute' or 'chronic' (recognizing that the divisions are not absolute).

Acute seed insecurity is brought on by distinct, short duration events that often affect a broad range of the population. It may be spurred by failure to plant, loss of a harvest, or high pest infestation of seed in storage. While in normal times households may have various degrees of seed security, all may be affected by an acute event such as a flood or short civil disturbance.

Chronic seed insecurity is independent of an acute stress or disaster, although it may be exacerbated by it. Chronic seed insecurity may be found among populations who have been marginalized in different ways: economically (for example, poor, inadequate land, insufficient labor); ecologically (for example, in areas of repeated drought and degraded land); or politically (in insecure areas, or on land with uncertain tenure arrangements). Chronically seed insecure populations may have continual shortages of seed to plant; difficulties in acquiring off-farm seed due to lack of funds; or use low quality seed and unwanted varieties on a routine basis. The result is households with built-in vulnerabilities.

Acute and chronic seed insecurity will very often exist together in emergency contexts. Indeed, in cases where emergencies are recurrent events, in drought-prone areas, for example, acute situations are nearly always superimposed on chronic problems rooted in poverty. For example, Zimbabwe in 2007/08 had a severe drought (an acute stress), but this was embedded in a context of chronic (and complex) problems of ongoing political and economic instability.

More Refined Analyses Leading to More Targeted Responses

Using the definition of seed security outlined above, Table 2 gives examples of how identification of a specific seed security constraint should lead to a quite targeted response. So, for example, if 'seed availability' is assessed as the problem, seed-based interventions, such as seed importation (for acute shocks) or development of community-based or formal

sector suppliers (for chronic stress), may be appropriate. In contrast, a diagnosis of a problem of 'seed access' might wisely trigger a holistic analysis of livelihood strategies. In the acute phase, providing farmers with cash or vouchers to get their desired seed might be effective . However, an identification of access problems on a chronic basis should lead practitioners to look well beyond seed and seed security constraints. The inability to access a certain necessary good on a repeated basis is usually equated with problems of basic poverty. Initiatives to help farmers generate income and strengthen their livelihoods would be essential here.

Table 2: Types of seed problems and broadly appropriate responses

Problem	Short-term	Long-term
Unavailability of seed	*Where farmers source seed predominately through informal seed channels:* Enhance immediate operation of local and regional markets (response dependent on context: for example, offer inventory credit to traders, and facilitate improved access to market information, including advance notice of demand subsidies or of purchase) *Where farmers source seed predominately through formal seed channels:* Direct distribution of seed	*Where farmers source seed predominately through informal seed channels:* Support development of local and regional markets (encourage more access to credit, better established market information channels, more effective transport and seed storage support.) *Where farmers source seed predominately through formal seed channels:* Support development of quality assured seed production or supply chains, incl. commercial enterprises where viable
Poor and vulnerable farmers do not have access to seed	Cash disbursement Voucher disbursement (with seed fairs)	Poverty reduction programs
Seed of poor quality and/or lack of appropriate varieties	Seed fairs with quality controls **Limited** direct distribution or sale of samples of quality seed (for subsequent multiplication) Distribution of foundation (pure and healthy) seed to a limited number of farmers, making use of informal seed channels to diffuse the seed to others.	Programs to improve seed quality (on farm and/or in seed and grain markets) Participatory varietal selection Participatory plant breeding

It bears emphasis that relief seed aid can have negative as well as positive consequences. Repeated direct seed distributions distort farmers own seed procurement strategies (Sperling, 2002; Phiri *et al.,* 2004), undermine local seed/grain market functioning, particularly in terms of retail sales (Rohrbach *et al.,* 2004 ; Walsh *et al.* 2004) and compromise the development of longer-term more commercial seed supply systems (Tripp and Rohrbach, 2001; Bramel and Remington, 2004; Rohrbach *et al.,* 2005). The possible negative effects of seed aid should be increasingly factored into decisions about what type of aid might be given, and how often. Also, as much of emergency aid unfolds in chronic stress and complex contexts, there is increasing urgency to link short-term relief with more developmental perspectives (Rohrbach *et al*., 2004). Some relief-development initiatives may be seed-

related, such as introduction of new varieties and local seed/grain market strengthening . Others go well beyond a seed system focus and towards a set of approaches that support and strengthen basic livelihood strategies.

Current Major Response Options Being Used in Emergency

Different types of seed-related interventions are currently being implemented in emergency and chronic stress contexts. These are distinguished between those which deliver direct forms of aid (and generally assume 'a lack of available seed') and those which are market-based and give recipients cash or vouchers to procure seed themselves (and hence assume 'lack of access' as the driving need). Responses might also focus on seed quality issues, both varietal quality and seed quality *per se* (health, germination rates, and purity), although these tend to be medium or longer-term interventions (Table 3).

Important within the emergency seed assistance field is that for many years, Direct Seed Distribution (DSD – also known as "Seeds and Tools") has dominated seed aid response. Use of a DSD approach implies a problem of lack of seed (non-availability) on the ground. DSD in Zimbabwe has been used on a routine basis since about 1991, every two to three years (see Section IV, Stress context) . DSD approaches also often involve promotion of Modern Varieties as their central 'emergency' element, Emergency DSD in Zimbabwe, in fact, has been more important than normal research and development (R&D) channels, for getting new varieties to farmers (see Section VII), although this extension function might better be served by development agencies which can give technical advice and field follow-up.

Voucher and cash approaches, linked to seed-related assistance, have been promoted mostly within the last five years, with the seed voucher approach having been first used in Kenya in 2000, and moving to Zimbabwe shortly thereafter, in 2002 (Bramel and Remington, 2004; Mazvimavi *et al*., 2008). Both these forms of assistance are based on the assumption that seed *is* available in a given context, and that farmers simply need enhanced means to buy it. Use of these latter approaches would imply that the aid implementers have diagnosed the seed security problem as being one of access.

One can continue down the Table 3 item by item and shortly realize that, in theory, each approach currently in use carries with it set of distinct assumptions of what specific seed security problem is being addressed (availability, access, seed/varietal quality) and whether this problem is a short (acute) or long-term one. In practice, these approaches are almost always used in absence of any real diagnosis of the seed security problem and are chosen for reasons delinked from on-the ground analysis. For example, one implementer might always favor DSD, and know only how to conduct this; and another implementer might always prefer cash,as this coincides with his/her institutional philosophy). This indiscriminate use of seed-related responses is making the seed aid field much less effective than it can be: problems are not being solved, and unintended effects, such as dependencies, are being promoted.

Table 3: Typology of current seed system interventions

	Description / Rationale	Constraints to which they should be targeted
	Direct aid	
1. Direct Seed Distribution Emergency Seed Provision 'Seeds and tools'	Procurement of quality seed from outside the agro-ecological region, for delivery to farmers. The most widely used approach to seed relief.	Short term response to address problems of seed availability especially in situations of total crop failure and/or long-term displacement of farmers. Response sometimes also used as 'on-off action' to introduce new crops + varieties that are usually supplied by the formal sector
2. Local procurement and distribution of seed	Procurement of quality seed from within the agro-ecological region, for delivery to farmers. A variant of 1.	Short term response to address problems of seed access or highly localized problems of seed availability
3. Food aid 'Seed aid protection ration'	Food aid is often supplied in emergency situations alongside seed aid so that the farming family does not need to consume the seed provided. Where local seed systems are functioning, but the previous harvest was poor, food aid can similarly protect farmers' own seed stocks.	Short term response accompanying direct seed distribution to address problems of seed availability
	Market-based aid approaches	
4. Vouchers / Cash to farmers	Vouchers or cash can provide poorer farmers with the means to access seed where it is available, from local markets, or the commercial sector. Vouchers or cash enables farmers to access crops and varieties of their choice.	Short term response to address problems of seed access especially in situations of local seed shortages and local markets or farmer-farmer barter normally used. Can also be used to link farmers with agro-dealers.
5. Seed Fairs	Seed fairs provide an *ad hoc* market place to facilitate access to seeds, or specific crops and varieties, from other farmers, traders, and the formal sector. Usually used in conjunction with vouchers to provide poorer farmers with purchasing power.	Short or medium term response to address problems of seed access especially for subsistence crops, and where local markets normally used. Increasingly also used to give farmers access to new varieties
	Seed production and varietal development	
6. Seed Production Community-based, local seed production	Farmers are trained and/or contracted to produce seed, distinct from their regular production activities, often based on formal seed standards. Some approaches focus on improving quality attributes, others are designed specifically to facilitate the movement of new 'improved varieties into local systems; still others are conceived as basically income-generating or profit-making enterprises.	Medium or long term response to address problems of seed quality (of local materials) or, access or availability of new varieties.
7. Provision or development of better varieties through small packets, participatory varietal selection, or participatory plant breeding	Important where farmers need access to new genetic material.	Medium or long term response to address problems of seed quality (genetic/ varietal attributes).

source:, modified from Sperling *et al.,* 2008

III. METHODS

Seed System Security Assessment

A seed system security assessment (SSSA) reviews the functioning of seed systems which farmers use, both formal and informal. It assesses whether seed of adequate quality is available and whether farmers can access it. The approach also promotes strategic thinking about the relief, recovery or development vision needed. For instance, during a period of stress, should efforts aim to restore the system as it was, *ex ante,* or aim to strengthen it? Should seed system-related support focus on crops for food, income or both? Should interventions hone in on crops linked with the most vulnerable (e.g. women)? A full description of the SSSA method can be found at http://www.ciat.cgiar.org/africa/pdf/sssa_manual_ciat.pdf. Box 1 summarizes the steps.

BOX 1. SEVEN BASIC STEPS IN ASSESSING SEED SYSTEM SECURITY

1. Identify zones for assessment and possible intervention.
2. Describe the normal status of crop and seed systems.
3. Describe the broad effects of the disaster on these farming systems.
4. Set goals for relief and recovery operations based on farmers' need.
5. Assess the post-crisis functioning of seed channels to determine whether short-term assistance is needed.
6. Identify any chronic stresses requiring longer-term solutions and identify emerging development opportunities.
7. Determine appropriate short- and longer-term responses based on analysis of priority constraints, opportunities, and farmers' needs.

The task of conducting an SSSA in Zimbabwe was particularly challenging. There are multiple baselines that had to be used to describe the 'normal' situation or the normal desired situation : before the land reform, before the currency decline… . Also stresses are ongoing and somewhat unpredictable in Zimbabwe, for example, when will the money flow regularly again)--- just as opportunities are quickly evolving.

Methods used

The range of methods used and themes explored in the SSSA are sketched below. Basically, the team investigated the functioning of seed systems using a mix of qualitative and quantitative methods, focused on multiple stakeholder insights and cross-checked information from the supply and use side. Current findings were also situated within a larger historical context.

Table 4: Investigative thrusts used in the SSSA work in Zimbabwe, July 2009

Type of Investigation	**Commentary**
Background information collection	Commissioning of specific documents on: • formal sector seed supply trends • fertilizer supply trends • coping strategies • gender-related livelihood trends
Database utilization	Use of MoA and FAO databases on: • crop production trends • seed aid history
Key informant interviews	Seed Houses MoA personnel (DA. DAEO) Grain Marketing Board Crop-specific specialists (maize, sorghum, legumes) Civil society key initiatives (e.g. trader agent)
Community-based focus group discussions (N=8)	Separate community and women- only FGD Topics of; • agricultural and variety use and trends • seed source strategies, by crop • determinants of 'bad' and 'good season • effects of currency instability • community seed security assessment • women's crop and seed –related constraints and opportunities
Individual farmer interview (N=165)	Topics of: • priority • seed source patterns, 2008-09, 2009-10 • fertilizer use 2008-09, 2009-10 • seed aid history
Agro-dealers site visits and interview (N=35)	Topics of: • input supplies • buyer patterns • enterprise history and prospects
Seed/grain market analysis (5 sites)	Assessment of: • crops and varieties supplies on market • pricing patterns • sourcing areas • seed quality management procedures

Site Choice

Sites were chosen so as to link assessment to action, and also to allow for some extrapolation of findings. Districts and wards were chosen along the following criteria:

- Zones of NGO interventions where organizations were prepared to address seed security- related constraints and opportunities;
- Zones sufficiently contrasting so as to potentially uncover different types of seed security scenarios and lessons;
- Classic 'maize' zones and 'small grain' zones;
- Areas at or near country borders, to assess possible effects of cross-border trade on seed security.

Four sites were chosen for assessment:

Murehwa	ward 14	natural region IIB
Bikita	ward 15	natural region III
Tsholotsho	ward 12	natural region IV
Beitbridge	ward 10	natural region V

Murewha represents a prime maize zone in a higher potential region, Tsholotsho and Bikita are largely small grain zones, in which maize is also grown. Beitbridge is at the edge of where agriculture is viable, and also lies at the South Africa border. Figure 1 shows the location of the sites of investigation. The next section characterizes the four sites in more detail.

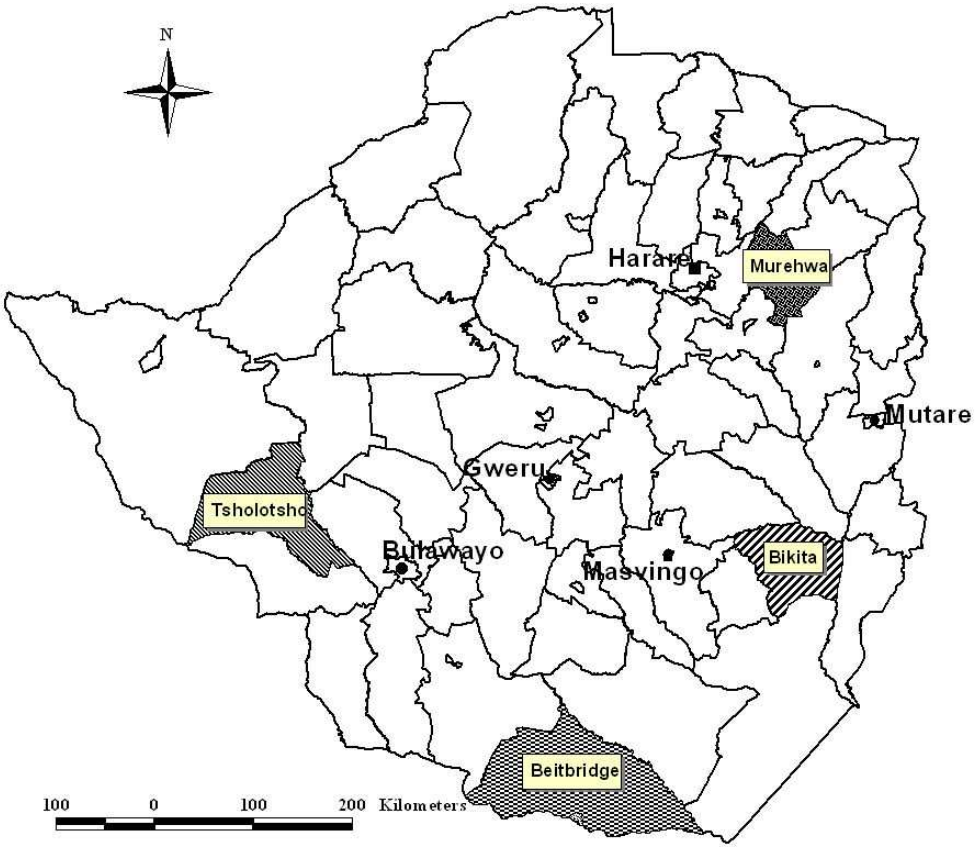


Figure 1: Selected district study sites for the seed systems security assessment

Characterization of sites

Here we provide a brief background characterization of farming systems in the selected study sites of Beitbridge, Bikita, Murehwa and Tsholotsho. The selected study sites present a good indication of the breath of agricultural systems in the smallholder sector of Zimbabwe.

Major features of the farming systems

Soil types and productivity

The selected study sites (Figure 1) are traditional Communal Areas that are linked to the colonial history of the country, where local communities have practiced smallholder agriculture for over 50 years. The Communal Areas are dominated by some of the more agronomically challenging coarse sandy soils. The soil types range from the Kalahari sands (Ferralic/Luvic Arenosols, under the World Reference Base; also classified as Regosols in Zimbabwe) in parts of Beitbridge and Tsholotsho, to the granitic sands (Haplic lixisols/Arenosols) that predominate in most parts of Murehwa and Bikita.

Agro-ecologies and major crops in the study sites

Land holdings for households in all study sites average 3 ha per household. Murehwa is in Zimbabwe's Natural Region NR II which receives between 750-1000 mm of rainfall per year, and considered the bread basket region of the country where most of the staple maize and grain legumes such as soybean are produced [2]. Bikita is largely in NR III receiving 650-800 mm yr^{-1} of rainfall (figure 2b) although parts of the districts are in NR IV which receives lower amounts of rainfall. Maize, groundnut and Bambara nut are principal crops in Bikita. The semi-arid zones of Tsholotsho and Beitbridge in NR IV and V receive about 450 mm yr^{-1} , (Figure 2a&d) with sorghum and millets among the widely grown crops, although maize still remains a very common crop despite its frequent failure under rain fed conditions. Communities in all the study areas are generally dependent on rain-fed agriculture, apart from areas such as Bikita where smallholder irrigation schemes have partly supported crop production. Table five gives an overview of key site characteristics.

Crop-livestock interactions

Livestock, particularly cattle play a central role in the farming systems across all study sites, not only by providing services such as draught power, transport, food (meat and milk) and manure, but also by providing various socio-cultural services in marriages, conflict resolution, capital investment (also form of insurance), and traditional and ritual ceremonies. Small ruminants such as goats and sheep are also used to provide meat and other social services, and larger populations are in the semiarid districts where there is less competition with cropping. Timely implementation of cropping activities is often associated with ready access to cattle. In turn, most of the residues from the crop lands are primarily targeted for cattle feed.

[2] Agro-ecological regions in Zimbabwe are classified mainly according to rainfall (Vincent and Thomas, 1960).

Table 5: Basic characterization of farming systems in selected district sites for the seed systems assessment study

Site/District	Agroecological zonation	Major soils and vegetation	Crops grown
Murehwa (Mashonaland East)	• Lies in NR II (> 800 mm rainfall per annum) and is in the middleveld [750 meters above sea level (masl)]. • Mean of maximum and minimum air temperatures range from 15°C in June to 22°C in October	• Well drained, shallow to deep reddish brown sandy loams, sandy clay loams, sandy clays and clay loams. • The natural vegetation is miombo woodland dominated by *Brachystegia speciformis, Julbernardia globiflora* with *Brachystegia boehmii* becoming locally dominant with decrease in effective rainfall.	• Households have approximately 3 ha of arable land. • Maize is the dominant crop grown during the rainy season, and is also planted as an early crop in vleis. • Groundnut, Bambara groundnut, sweet potatoes and cowpea are grown as minor crops in summer. • Marketing gardening is done through out the year and peak period is in the dry season.
Bikita (Masvingo)	• Lies in NR III (650- 800 mm rainfall per annum) and is in the middleveld (560 masl). • Some parts of the district are in NR IV, receiving 450-650 mm rainfall per annum • Mean of maximum and minimum air temperatures range from 15°C in June to 22°C in October	• Shallow medium –grained sands or loamy sands over yellowish brown loamy sands or sandy loams. • Disturbed remnants of miombo woodland dominated by *Julbernadia globiflora* and *Brachystegia glaucescens* tree species. • At low elevation, *Acacia* spp. may become dominant.	• Households have approximately 3 ha of arable land. • Maize, sorghum and millets are the major crops. • Groundnut, Bambara groundnut, sweet potatoes and cowpea are grown as minor crops in summer. • Small scale irrigation schemes are also used to support crop production. • Marketing gardening is done through out the year and peak period is in the dry season
Tsholotsho (Matebeleland North)	• Lies in NR IV (450-650 mm rainfall per annum) and is in the lowveld (500 masl). • Mean of maximum and minimum air temperatures range from 15°C in June to 22°C in October	• Well drained, deep Kalahari sands with low water holding capacity. • The natural vegetation is typical dryland dominated by *Baikiaea plurijuga, Colophospermum mopane* and *Acacia* tree species.	• Households have more than 3 ha of arable land. • Generally considered marginal for dryland crop production due to inherently infertile soils and low rainfall. • Sorghum and millets are usually grown in summer but yields are often low.
Beitbridge (Matebeland South)	• Lies in NR V (< 450 mm rainfall per annum) and is in the lowveld (550 masl) • Mean of maximum and minimum air temperatures range from 14°C in June to 23°C in October	• The soils are well-drained, deep, medium grained sands. • The vegetation is characterized by open, disturbed woodland dominated by *Baikiaea plurijuga, Colophospermum mopane* and *Acacia* tree species.	• Households have more than 3 ha of arable land. • Generally considered marginal for dryland crop production due to inherently infertile soils and low rainfall. • Sorghum and millets are usually grown in summer but yields are often low. • Micro-scale vegetable gardening is done in the dry season.

Sources: Vincent and Thomas, 1960; Anderson et al 1993

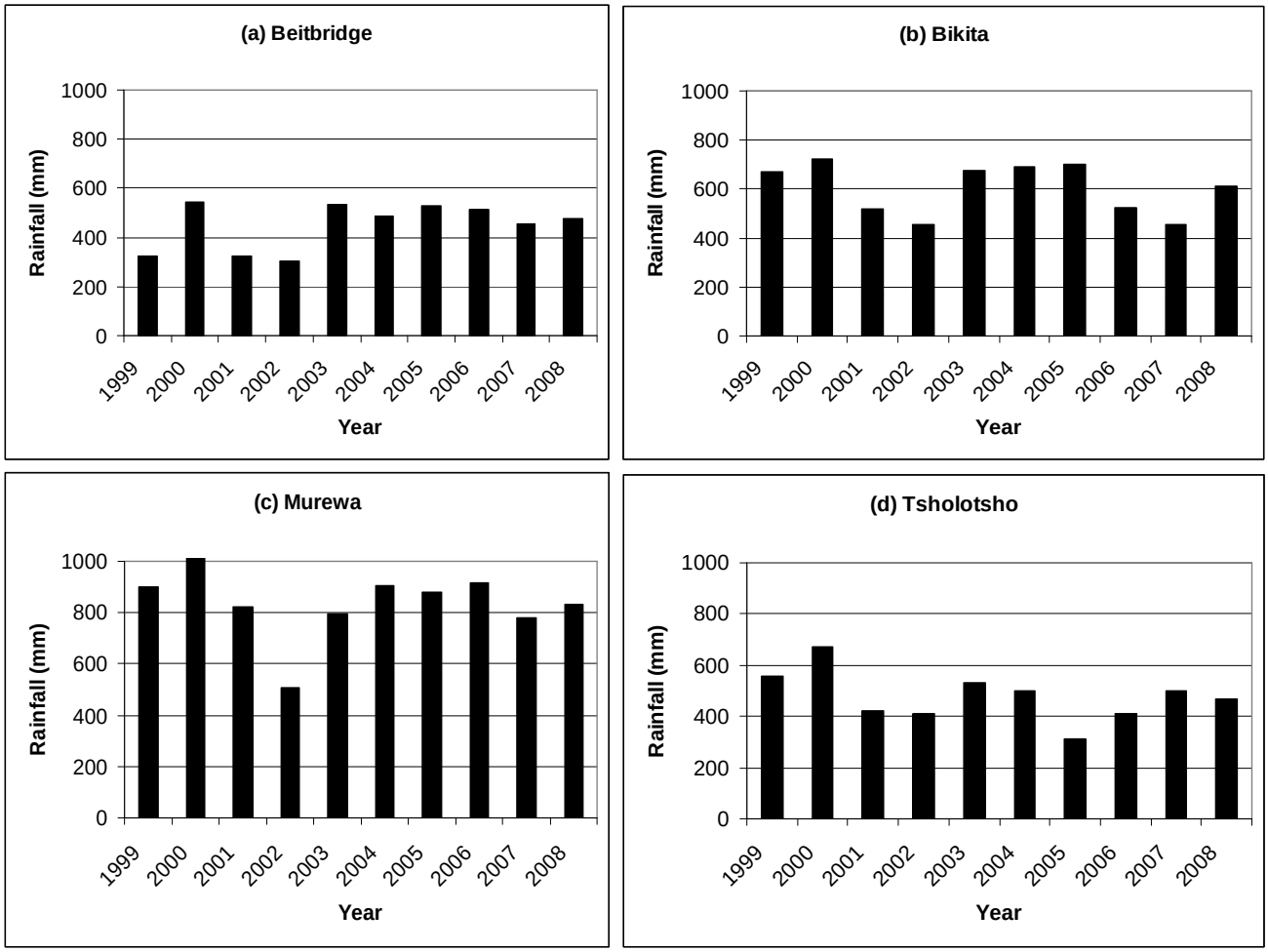


Figure 2: Total annual rainfall received from1999 to 2008 in selected districts falling under different agro-ecological regions of Zimbabwe (Source: Zimbabwe Meteorological Office)

Cereals predominate over other crops in terms of cropped area in any one season. Maize often accounts for over 80% of the total area under cropping NRII and NR III, but decreases to less than 50% in the drier regions. For instance, of the selected districts Murehwa has about 90% of the land allocated to maize while the driest district, Beitbridge, has 22% of cropped land to maize and 44% to sorghum (Table 6). In general, the yield patterns across the selected study sites are consistent with agro-ecological potential. Beitbridge which experiences much more erratic rainfall patterns than Tsholotsho often has the least production (MAMID, 2009). Of the selected districts, Bikita is the only one producing all major small grains in substantial quantities (sorghum, finger millet and pearl millet). Tsholotsho and Beitbridge district exhibit a similar pattern that there is almost a complete absence of finger millets, while all the small grains are almost absent in the designated high rainfall zones such as Murehwa.

Table 6: Estimated yields and areas allocated to major cereal crops grown by smallholder (communal) farmers in selected districts of Zimbabwe during the 2008/09 cropping season *

Site (District)	Maize		Sorghum		Finger millet		Pearl millet	
	Area (ha)	Yield (t ha^{-1})	Area (ha)	Yield (t ha^{-1})	Area (ha)	Yield (t ha^{-1})	Area (ha)	Yield (t ha^{-1})
Beitbridge	3,982	0.19	9,787	0.37	0	0.00	4,437	0.23
Bikita	21,175	0.57	7,832	0.63	8,724	0.52	4,609	0.33
Murehwa	27,491	0.46	676	0.28	2,197	0.32	188	0.22
Tsholotsho	6,366	0.67	6,016	0.64	1	0.20	10,710	0.38

Source: MAMID Crop and Livestock Assessment Report, 2009

- Note that the yield seem low for a season such as that of 2008/09, especially for the higher potential areas. Crop performance may have been affected by leaching and lack of fertilizers.

Alternative sources of livelihoods for different population groups

While agriculture remains a major source of livelihoods for communities across the selected districts (Table 7), frequent crop failures due to a combination of climatic constraints and market failures over the past decade have led to development of new coping mechanisms. These include cross-border trading, mainly by (but not exclusive) households living in districts close to national boarders such as Beitbridge (South Africa) and Tsholotsho (close to Botswana), and those staying in proximity to major national highways such as Murehwa (leading to Mozambique and Malawi). Farmers in Murehwa, which is close to the Harare markets, actively participate in trading of horticultural crops. This form of market gardening is apparently difficult for farmers in the other remote districts. There were also significant movements of people from districts of residence in search of off-farm income generating activities such as gold panning.

In general, the four selected sites represent well the cross-section of the regions in which Zimbabwean agriculture --and Zimbabwean seed aid—continue to unfold.

Table 7: Overview of general livelihood patterns and population groups in the districts selected for the seed systems assessment study in Zimbabwe

Zone	Population	General livelihood patterns
Beitbridge	• Dominated by the *Venda* tribe • Total population = 92 189 (49% male ; 51% female) • Population density = 16 persons/km^2	• A major source of income is cross border trading and livestock (small ruminants) production. • Significant income also comes from remittances by household members working in nearby South Africa. • Subsistence livestock production is also a major source of livelihood.
Bikita	• Dominated by the *Karanga* tribe • Total population = 164 451 (48% male ; 52% female) • Population density = 36 persons/km^2	• Subsistence crop and livestock production are the major sources of livelihoods. • Significant income also comes from remittances by household members working in nearby cities and out of the country. • Small-scale horticultural production is a major source of livelihoods.
Murehwa	• Dominated by the *Zezuru* tribe • Total population = 170 834 (48% male ; 52% female) • Population density = 35 persons/km^2	• Marketing gardening is a main source of income because of close proximity to Harare market. • In good seasons, excess maize is sold to Grain Marketing Board. • Significant income also comes from remittances by household members in nearby cities and outside the country • Vending along the Nyamapanda highway to Mozambique & Malawi also generate income for households.
Tsholotsho	• Dominated by the *Ndebele* tribe • Total population = 128 154 (48% male ; 52% female) • Population density = 12 persons/km^2	• The major source of income is cross border trading and livestock (small ruminants) production. • Significant income also comes from remittances by household members working in nearby South Africa and Botswana. • Subsistence livestock production is also a major source of livelihood.

(Source: Farm Community Trust of Zimbabwe, 2001; CSO, 2002a-d; Roth, M. and Gonese, F. 2003; Rukuni et al., 2004; Ministry of Public Service, Labor and Social Welfare, 2006)

IV. THE STRESS CONTEXT

The Seed System Security Assessment in Zimbabwe was carried in a complex and chronically-stressed environment. Such stress has been caused by economic, political, health and climate-induced factors and these stresses, combined, have led to: significant food insecurity, wide scale breakdown of basic services, shortages of commodities, civil unrest, a contracting economy, unprecedented inflation and damaged agriculture since 2000. Efforts by the Government of Zimbabwe (GoZ) to address the deteriorating situation only slowed down, but could not stop the decline. Interventions by donors, NGOs and UN agencies reduced shortages of food, saved lives and livelihoods, but became protracted with no clear exit strategy.

The sketch below of the context in which the SSSA took place cannot do justice to the full set of root causes and effects which have contributed to declining livelihoods in Zimbabwe. We simply give a glimpse of the kinds of stresses that have affected agricultural production and, by extension, seed security in Zimbabwe. Extensive analysis of agricultural, political and poverty trends can be found in numerous publications (e.g. Alwang et al., 2002; World Bank, 2006)

For ease of presentation, we divide stresses into economic, political, health and climate-induced factors: we recognize that they are intricately inter-related. The declines in agriculture are then traced, along with the rise in emergency seed aid assistance.

Economic Trends

At independence in 1980, Zimbabwe inherited a centralized but specialized economy. Industry and commerce, based on agriculture, were highly developed and innovative producing essential goods and services sustaining the economy. Agricultural extension, research services and loan facilities were provided for commercial, small-scale commercial and communal farming sectors. Between 1980 and 1999, Zimbabwe's agricultural sector grew steadily, albeit slowly: close to 50% of the GDP depended directly or indirectly on agriculture and agro-industry (World Bank 2006.)

In the late 1990s, Zimbabwe's economic growth began to slow down, following a balance of payments crisis and repeated droughts. Since 1999, Zimbabwe's economic conditions have continued to deteriorate, currently reaching a critical level. Estimates in June 2008 put annual inflation above 10 million percent . Real GDP is estimated to have contracted further in 2007 by more than 6 percent, after declining by about one-third between 1999 and 2006 (http://go.worldbank.org/RFP74M2PK1)

A recent assessment by FAO/WFP vividly summarizes the trends since 2001: the GDP and agricultural growth had been in steady decline for the full decade, while the external debt has consistently risen, reaching US$ 6 billion (Table 8).

Table 8: Zimbabwe - Key economic indicators, 2001–2009

	2001	2002	2003	2004	2005	2006	2007	2008 est.	2009 exp.
GDP per head (US$ at PPP)[1/]	214	204	185	182	174	170	165	145	lower
Real GDP change (% year on year)	-8.4	-5.6	-10.6	-4.2	-7.7	-4.6	-5.5	-12.6	from negative to slightly positive[2/]
Agricultural GDP growth rate (%)	-3.9	-22.7	-1.0	-2.9	-10.0	-4.5	-5.0	-17.5	positive [2/]
Consumer price inflation; avg (%)	75	135	385	381	267	1 034	12 563	56 mill.	near zero
Agricultural exports % of total	39	36	31	23	21	14	22	23	higher [3/]
Total exports (US$ mill.)	2 114	1 802	1 670	1 684	1 606	1 533	1 804	1 651	lower [3/]
Total imports (US$ mill.)	1 791	1 821	1 778	1 989	1 994	2 000	2 113	2 630	lower [4/]
Trade deficit (US$ mill.)	-323	18	108	305	388	467	310	979	lower
Total external debt (US$ bill.)	3.6	3.9	4.5	4.8	4.3	4.7	5.3	6.0	higher

source: FAO/WFP CFSAM June 22 2009

document sources: The Reserve Bank of Zimbabwe; EIU; World Bank, Harare; and CFSAM expectation for 2009.
1/ Given the significant out-migration of population not accounted for in the official population figures the GDP per capita is
somewhat under-estimated and its decline overstated.
2/ Due to estimated increase in crop production.
3/ Mainly due to decrease in total exports and reduced mineral prices.
4/ Due to lack of availability of foreign currency to pay for imports and reduced maize import requirements.

Multiple factors have contributed to the steep economic decline and among those most often cited is the land reform of 2000. Rooted in an effort to redress racial inequity, this government action shifted 9,000 large-scale commercial farms and about 20 large agro-industrial estates away from white families and towards smallholder black households (World Bank 2006) (see also section on political trends. Other economic decline factors include an unreasonably high government expenditure, excessive domestic and internal borrowing, unwarranted government interference in commercial business—all of which fall outside of the expertise involved in report.

On a positive note, in March 2009, the government started on a program of economic liberalization and changed currency away from the Zimbabwean dollar (ZAR) and to the US$. Grain market reform includes free movement and buying and selling of grain in the country, removal of import duties and designation of the government Grain Marketing Board as a buyer of last resort (FAO/WFP, 2009).

In reference to this SSSA, we suggest below how some of the economic trends during the last five years made it hard for farmers to get input supplies or to sell their produce.

Hyper-inflation: and currency challenges

The country has suffered through a period of currency inflation for much of the last decade. In 2008, before the adoption of the US$, the annual rate of inflation had reached an estimated 56 million percent (the World Bank calculation) (FAO/WFP, 2009), with the highest currency denomination in circulation being a 100 trillion dollar note. The table below gives an idea of the speed of currency change.

Table 9: Inflation rates over time as quoted by the Central Statistics Offices report: December 2008

Time(Date) announced	Period refereed	Inflation (%)	Source (Comment)
14 Feb 2008	Dec 2007	66,212.3	Central Statistical Offices (official figures)
20 Feb 2008	Jan 2008	100,580.2	Central Statistical Offices (official figures)
04 April 2008	Feb 2008	164,900.3	Financial Gazette
15 May 2008	Mar 2008	355,000.0	Zimbabwe Independent
21 May 2008	Apr 2008	1,063,572.6	Unofficial reports (SW Radio Africa)
26 June 2008	Annual	7,336,000	Zimbabwe Independent
July 2008	Annual	231 million	Central Statistical Offices (official figures)

For farmers (and others) not only was money losing worth second by second, but in an attempt to curb the currency (and inflation) flow, The Reserve Bank of Zimbabwe (RBZ) placed ceilings on money withdrawals**.** Farmers would come into town to withdraw money and would sometimes be told that banks had run out of cash, or that they could only withdraw up to a certain amount stipulated by the RBZ. Bank withdrawal cash limits were too low to purchase agricultural inputs: seed, fertilizer or other farming –related needs.

Market Outlets

Established market outlets for all products, including agricultural, also suffered the liquidity crunch. Most traders started demanding payments in foreign currency, illegally. To curb sky rocketing Zimbabwe dollar prices, the GOZ established the Pricing Commission which could determine prices of all items on sale. Price increases had to be approved by this commission, but in reality, by the time a price was determined, another price increase would have become necessary – hence the rate of inflation was much higher than pace of price rise approval. Inspectors were sent out to monitor and arrest any managers who were charging 'exorbitant prices'. Most input supply businesses closed, arguing that they could not sell products at uneconomic prices.. Markets where farmers sold their products, like the Grain Marketing Board (GMB) would accept and grade farmers produce and pay them through checks two or three months later, resulting in farmers' losing significant money through such payment. Some resorted to selling their produce to private buyers who offered cash or foreign currency. The RBZ introduced some regulations that outlets and companies wishing to trade in foreign currency had to apply for licenses. Despite these setbacks communal farmers continued to trade in foreign currency.

Input Supply Irregularities

Due to price controls, inputs became scarce on the formal market and could be found only on the informal 'black market' at exorbitant prices or in foreign currency. In a move perceived by some as political, the GOZ initiated input support programs through the RBZ and Zimbabwe National Army-led distributions, code named 'Operation Maguta' (meaning "self-sufficient'). Seed and fertilizer companies *were directed* to sell their product to the GOZ at controlled prices for distribution to newly resettled and communal farmers. The logistical problems were so severe that most inputs were distributed as late as December or January (while planting time was October and November).

Imports

Price controls, banking regulations and inflation affected the industry as companies opted to reduce production, smuggle products out of the country or close shop. Consumers responded by crossing to neighboring South Africa, Mozambique, Zambia and Botswana to import most items, including basic groceries which became scarce in Zimbabwe. Some farmers near the borders also benefited from remittances from family members who have migrated in search of employment. Some agro-dealers also at border towns imported goods, including seed, for re-sale at a profit. Import duty on most items was relatively high, but was later lowered for agricultural goods. This further crippled the local industry.

The fertilizer industry in Zimbabwe is highly dependent on importation of some raw materials, mainly potash. At one time such imports were not possible due to foreign currency shortages. Hence the manufacture of compound fertilizer was curtailed leading to significant fertilizer shortages. As most soils in the communal areas of Zimbabwe require fertilizer application to obtain modest crop production, fertilizer shortages on the significantly reduced crop production. Similarly, over 80% of farmers in Zimbabwe use hybrid maize seed-normally available only from formal seed sector shops. Seed, fertilizers and chemical companies reduced production, held onto hold onto their stocks until profitable prices were negotiated, or preferred to sell to relief agencies paying in foreign currency or reduced production.

Emergence of a Barter Economy

These diverse developments in the local economy affected the rural farming families significantly as many (most) could not access the foreign currency. Although the GOZ introduced foreign currency licenses and later the uses of multi-currencies, the rural economy, in particular, changed to a bartering one to meet their seed, fertilizer and other needs (see Box 2). In certain communities , much of the barter trade was based on maize equivalents.

BOX 2. LOCAL BARTER TERMS FOR SEED, DRAUGHT POWER & FERTILIZER

Terms of Trade	Where
1 goat = 10 kg hybrid maize seed	Murehwa
1 cup maize seed= 1 cup shelled groundnuts seed	Tshol., Mureh. Bikita
1 chicken= 5 liters maize seed	Tsholotsho
10kg top dressing or basal fertilizer = 10 kg maize seed	Murehwa
1kg bar carbolic soap = 5 liter unshelled groundnuts	Tsholotsho
20 liter storage container = 20 liter unshelled groundnuts	Tsholotsho
Planting labor of 2 cups of seed = receipt 1 cup of seed	Bikita
Herding labor fin summer = use of draught animal tillage for 2 acres	Murehwa
Tilling 1 acre using draught animals= 1 bucket of unshelled groundnuts	Bikita
½ drain (about .3 ha) tillage with hoe == 1 cup maize or groundnut seed	Bikita
6½ buckets (app. 125 kg) maize grain = 50 kg fertilizer	Bikita
1 cup shelled g/nuts= 1 cup shelled Bambara nuts	Beitbridge
10 liters pearl millet = 5 liters groundnuts	Beitbridge
1 chicken= 5 liters unshelled g/nuts	Beitbridge
1 goat= 50 kg unshelled g/nuts	Beitbridge

Note: The terms of exchange appear to be influenced by scarcity of seed. For example in Beitbridge where groundnut seed was reported to be in short supply locally, farmers exchange a goat (very valuable) for a 50kg bag of unshelled groundnuts.

Political Context

Two features in this complicated political context particularly contributed in creating the current stressful context: the land reform process, and the protracted political tensions and post-election uncertainties.

The land reform process

The land reform process sought to correct one cardinal injustice of the past colonial era - inequitable distribution of land. Black people had been forcibly removed from fertile land in high rainfall areas, Natural Regions I, II and III, and relocated to infertile areas in arid areas in Natural Regions IV and V. Despite significant donor support to the GOZ Land Resettlement Program (LRP) for twenty years post-independence, serious glaring disparities still existed between commercial and smallholder farmers on land distribution. On attainment of independence in 1980, the GOZ started the resettlement program to correct these previous injustices which was based on the willing seller willing buyer basis.

In 2000 the GOZ embarked on the 'fast track' land redistribution exercise which at first targeted multi-farm owners and later the majority of commercial farmers. This exercise was frequently violent, with farm occupations often being directed by ex-combatants of the

liberation war. This led to disruptions of farm activities as new farm owners tried to start up operations with minimal resources. Capital was not adequate to maintain tractors and other farm machinery, to remunerate workers, and to contract specialist services. Agriculture production plummeted in the wake of additional problems of poor rainfall and poorly performing economy. The large seed houses lost experienced commercial seed producers and the contracted new seed producers found it difficult to honor their contracts. The farm invasions (land reform) impacted on the smallholder farmers in multiple ways. Smallholder farmers who benefited could subsequently farm on larger tracks of land and expand their operations – but they held onto their plots in the communal areas, effectively denying land expansion by remaining smallholders. Beneficiaries also had to use high power soil tilling machinery on the predominantly heavy clay red soils on the invaded land : this practice was a sharp contrast to the ox drawn plows they used on the mainly sandy soils in the communal areas.

Polarized political process

The period from 2000-09 has been one of continuing political tensions and uncertainty. An opposition party was formed in September 1999; violent elections started in 2000, and then continued in the 2005 elections.

The March 29, 2008 presidential elections had no clear majority winner but combined opposition parties won the parliamentary elections. Violence marred the presidential runoff elections on June 27, 2008, leading to withdrawal of the opposition candidate.

After intense negotiations between the various political parties for a settlement of the Zimbabwe crisis, The Southern African Development Community (SADC) announced an agreement on September 15, 2008. A Government of National Unity (GNU) comprising all political parties was to be formed. The official GNU started off in February 2009 and many analysts perceive that this marked the end of the political crisis in Zimbabwe, and the start of a new era of re-building confidence in government.

The World Bank Vice President, who met Zimbabwe government officials in April 2009, acknowledged that the short-term program of the unity government points in the right directions. She, however, stressed that Harare is still a long way from building the massive confidence that is needed among development partners for funding to be provided through government channels for long-term programs.

Brain drain

The political and economic decline and continuing stresses have resulted in a significant migration, including massive brain drain, from Zimbabwe. Specific studies show about 500,000 overseas (SIRDC, 2008) as of the end 2008- but popular estimates go as high as 3 million. During the SSSA, one focus group discussion in Tsholotsho reported all participants, numbering 22, with a family member in South Africa. The exodus is stalling the country's development because of the huge deficit in manpower. The health sector gives an example of the degree of brain drain. Three-quarters of doctors leave the country within a few years of completing medical school (Motsi, 2003). Similar losses are appearing across specialized professions, engineers, lawyers, university professors,--and commercial farmers.

Health Concerns

The decline of the Zimbabwe economy has resulted in poor service delivery which critically affects the social and health sectors. The public service was not well-remunerated; plant, equipment, tools and instruments were and continue to be in disrepair, Several kinds of welfare issues went 'out of control" : including HIV/AIDS and a cholera outbreak, and food security and malnutrition.

HIV/AIDS

The HIV/AIDS prevalence rate in Zimbabwe is around 25 percent, or the virus directly infects one in every 4 people. Three hundred people die from the disease each week and 1.3 million children are orphaned. The declining economy in Zimbabwe has meant cutbacks on essential services to address the HIV/AIDS: palliative care for the infected and support for care givers, promoters of positive behavior and support groups. The overall likely effect has been a resurgence of infections and weaker support systems. Most HIV/AIDS patients working in towns eventually withdraw to rural areas to die as the cost of living in urban areas is just too high. This move has exacerbated the situation of already over-burdened rural dwellers.

Cholera

According to WHO, more than 56 districts out of the 62 countrywide have reported cholera cases since the epidemic started in August 2008, (WHO, 2009). The Zimbabwe Association of Doctors for Human Rights (ZADHR) states that the cholera outbreak in Zimbabwe surpassed Africa's worst recorded (that in Angola) (DPA, 2009). The rate of mortality in Zimbabwe reached 4.6%, nearly five times that which the World Health Organization (WHO) regards as 'unacceptable'. The cholera rise took place against a background whereby the GOZ and City Council authorities could not afford to clear rubbish dump sites, to provide continuous clean water or to maintain sewage works.

Food Security and Malnutrition

The decline in the Zimbabwe economy resulted and continues to result in the inability of the GOZ to provide food and basic commodities for the vulnerable groups. Early recovery of the food security situation was prevented by the prolonged political disruptions and election violence, currency and price controls, cholera outbreak and continuing HIV/AIDS infections and deaths, poor rainfall in some seasons, logistical challenges in trying to provide aid and general economic decline. Smallholder farmers became more resource-poor as they disposed of their assets to provide immediate needs meant they were unable to recover without assistance. A June 2009 report, provisionally estimates 2.8 million people will face food shortages in the 2009 /10 marketing year (from April to March) (FAO/WFP, 2009).

Disasters, including Droughts

Zimbabwe has also suffered from droughts in the years 2001/02, 2002/03, 2006/07 and 2007/08. Floods occasionally entered the picture.

As smallholder agriculture is rain-fed, the distribution and quantity of rainfall during the season is critical and significantly contributes to crop growth and final yields. Major drought

and non-drought 'disasters' that have occurred in Zimbabwe in the last 10 years are presented in Table 10 below.

Table 10: Disaster Conditions and Crop Production 2000/01 – 2008/09

Year	Disaster	Date/Month recorded	# people killed	# people affected	Agric. season
2000	Flood	Jan 26, 2000	70	266,000	2000 -2001
	Epidemic	Jan 2000	93	1,675	
	Epidemic	Nov 2000	11	-	
2001	Flood	Feb /Mar 2001	13	30,000/6,000,000	2001 - 2002
	Drought				(see Table 10)
2002	No report				2002 – 2003
2003	Epidemic	Oct 9, 2003	40	18,000	2003 – 2004
2004	No report				2004 -2005
2005	Epidemic	May 2005	14		2005 – 2006
	Epidemic	Dec 10, 2005	73		
2006	No report				2006 – 2007
	Drought				(see Table 10)
2007	Flood	Jan 2007		2,100,000	2007 – 2008
	Epidemic	Mar 25, 2007	67	10,000	
	Flood	Dec 13/Dec 19		18,000/2,000	
	Drought				(see Table 10)
2008	Epidemic	Aug 26, 2008	1,561	29,522	
2009	Epidemic	June 30, 2009			

Source: Disaster statistics Crop Production statistics drought / flood, agric production / areas / yields / no of people affected, assistance given, timeline 1999. (modified)

Agricultural Production Overviews

With its population of just over 11 ½ million people, Zimbabwe has some 64% of the population living in rural areas, with the vast majority of farming is done by the smallholder sector. Data on agricultural trends suggest the ways that stresses above have directly affected what is produced in the farmers' fields.

Long-term data on average areas planted to major food crops, and average yields (national basis) , are presented in Tables 10-11 (source; UNFAO, Harare). The data spans a 30-year period. Maize production area is rising, but the yields sharply declining (Table 11). The large fluctuations in maize yields in the last four years especially have been the result of limited access to fertilizer (supply and price), late planting (difficulty accessing seed on time) and mid-season droughts. In contrast, good rains in 2009 led to an increase in maize yields with a national average of just over 0.8 mt/ha. National production of maize in 2009 represented an increase of 130% over the record low harvest of 2008 (FAO/WFP, June 2009).

The small grain production figures show a markedly different trend. Area and overall production in small grains has been generally rising—as farmers seed to diversify their crop portfolios. However, yields per hectare show about a 10% decline in the last decade (Table 12).

Table 11: Maize production figures 1980- 2009, nation-wide, Zimbabwe

	Maize		
Year	**Area (h)**	**Production (t)**	**Yield(kg/h)**
1980	1,177,700	1,510,700	1,283
1981	1,363,400	2,833,400	2,078
1982	1,416,400	1,808,400	1,277
1983	1,333,900	909,800	682
1984	1,360,600	1,348,500	991
1985	1,256,000	2,711,000	2,158
1986	1,314,000	2,412,000	1,836
1987	1,211,100	1,093,700	903
1988	1,299,500	2,253,100	1,734
1989	1,198,300	1,931,200	1,612
1990	1,149,800	1,993,800	1,734
1991	1,101,200	1,585,800	1,440
1992	881,000	361,000	410
1993	1,248,347	2,063,003	1,653
1994	1,738,450	2,109,283	1,213
1995	1,487,606	884,962	595
1996	1,459,611	2,065,347	1,415
1997	1,406,074	1,552,703	1,104
1998	1,181,207	1,195,929	1,012
1999	1,477,990	1,606,588	1,087
2000	1,373,117	1,619,651	1,180
2001	**1,239,988**	**1,526,328**	**1,231**
2002	**1,327,854**	**604,758**	**455**
2003	**1,352,368**	**1,058,786**	**783**
2004	1,493,810	1,686,151	1,129
2005	1,729,867	915,366	529
2006	**1,712,999**	**1,484,839**	**867**
2007	**1,445,800**	**952,600**	**659**
2008	**1,722,322**	**470,668**	**273**
2009	1,521,780	1,242,571	817
1980s average	1,293,090	1,881,180	1,455
1990s average	1,313,129	1,541,842	1,166
2000s average	1,488,681	1,146,572	790
Recent 5 year Average	1,620,960	1,101,925	691

source; UN FAO, Harare

Note : drought years are emphasized in bold

Table 12: Small grain production figures 1980- 2009, nationwide, Zimbabwe

	Sorghum			Mhunga (pearl millet)				Rapoko (finger millet)				Small Grain		
Year	**Area (h)**	**Prod (t))**	**Yield(kg/h)**	**Area (h)**	**Prod (t)**	**Yield(kg/h)**	**Year**	**Area (h)**	**Prod (t)**	**Yield(kg/h)**	**Year**	**Area (h)**	**Prod (t)**	**Yield(kg/h)**
1980	120,000	66,000	550				1980				1980	120,000	66,000	550
1981	200,000	100,000	500				1981				1981	200,000	100,000	500
1982	200,000	50,000	250				1982				1982	200,000	50,000	250
1983	280,000	44,000	157				1983				1983	280,000	44,000	157
1984	156,000	37,400	240				1984				1984	156,000	37,400	240
1985	210,000	76,000	362				1985				1985	210,000	76,000	362
1986	150,000	66,200	441				1986				1986	150,000	66,200	441
1987	172,700	40,400	234				1987				1987	172,700	40,400	234
1988	213,000	163,100	766				1988				1988	213,000	163,100	766
1989	158,000	65,300	413				1989				1989	158,000	65,300	413
1990	127,800	72,500	567				1990				1990	127,800	72,500	567
1991	106,200	51,300	483				1991				1991	106,200	51,300	483
1992	64,000	10,350	162				1992				1992	64,000	10,350	162
1993	149,005	96,321	646				1993				1993	149,005	96,321	646
1994	160,632	52,621	328				1994				1994	160,632	52,621	328
1995	113,806	38,336	337				1995				1995	113,806	38,336	337
1996	205,909	90,215	438	244,259	51,814	212	1996	37,951	17,999	474	1996	488,119	160,028	328
1997	179,727	64,427	358	183,042	31,383	171	1997	39,273	16,233	413	1997	402,042	112,043	279
1998	126,039	39,154	311	142,761	15,368	108	1998	26,543	5,661	213	1998	295,343	60,183	204
1999	143,912	57,535	400	146,849	25,161	171	1999	36,595	16,735	457	1999	327,356	99,431	304
2000	116,248	46,307	398	122,717	19,359	158	2000	29,673	11,634	392	2000	268,638	77,300	288
2001	110,138	56,358	512	98,883	20,166	204	2001	57,306	23,028	402	2001	266,327	99,552	374
2002	81,513	21,614	265	65,253	4,006	61	2002	67,103	10,157	151	2002	213,869	35,777	167
2003	128,530	71,257	554	134,557	23,128	172	2003	35,610	18,434	518	2003	298,697	112,819	378
2004	227,768	129,391	568	164,884	45,623	277	2004	51,816	21,080	407	2004	444,468	196,094	441
2005	162,394	38,087	235	134,805	18,448	137	2005	36,735	9,262	252	2005	333,934	65,797	197
2006	265,192	101,248	382	175,924	40,937	233	2006	57,124	21,675	379	2006	498,240	163,860	329
2007	222,500	76,200	342	155,200	28,800	186	2007	66,500	15,000	226	2007	444,200	120,000	270
2008	283,185	57,974	205	116,842	23,359	200	2008	72,460	11,839	163	2008	472,487	93,172	197
2009											**1980s ave**	**185,970**	**70,840**	**381**
											1990s ave	**223,430**	**75,311**	**337**
											2000s ave	360,096	107,152	**298**

Source: UN FAO: Harare

Table 13 rounds out the agricultural trends with figures for livestock. The commercial beef and dairy herds with *pedigree cattle* have declined dramatically. Of the 1.6 million head of beef cattle held on large-scale commercial farms in 2000, only around 5,000 remained by 2002. However, cattle and goat numbers held in the smallholder sector have remained essentially the same since 2000 (FAO/WFP, 2007). In 2002 the number of cattle held in the smallholder sector was around 5.05 million head. In 2006 the numbers were reported at 4.99 million head (FAO/WFP, 2007). For goats, the number reported in 2002 was 3.38 million, versus 3.14 million in 2006. (FAO/WFP, 2007).

Table 13: Livestock numbers, 1980- 2009, nation-wide, Zimbabwe.

Year	Dairy cows	Pigs	Cattle	Sheep	Goats
1980	106,000	132,000	5,173,000	387,000	982,000
1981	104,000	183,000	5,182,000	469,000	1,243,000
1982	102,000	183,000	5,560,000	400,000	920,000
1983	105,000	183,000	5,442,000	399,000	1,081,000
1984	111,000	178,000	5,354,000	431,000	1,507,000
1985	111,000	171,000	5,388,000	461,000	1,624,000
1986	112,000		5,671,000	569,000	1,986,000
1987	121,000	216,000	5,797,000		2,162,000
1988	121,000	238,000	5,699,000	671,000	2,317,000
1989	123,000	304,000	5,723,000	569,000	2,368,000
1990	127,000	289,000	6,280,000	592,000	2,540,000
1991	126,000	305,000	5,223,000	584,000	2,545,000
1992	124,000	278,000	5,900,000	485,000	2,540,000
1993	115,000	240,000	5,040,000	416,000	2,297,000
1994	105,000	232,000	5,662,000	436,000	4,471,000
1995	105,000	264,000	4,712,000	435,000	5,001,000
1996	99,000	268,000	4,841,000	379,000	4,823,000
1997	96,000	310,000	4,879,000	416,000	5,054,000
1998	90,000	324,000	5,476,000	386,000	4,990,000
1999	82,000	257,000	5,893,000	351,000	4,601,000
2000		270,000		340,000	4,248,000
2001	55,150	360,000	5,418,116	598,000	3,657,000
2002	50,650	282,000	5,240,694	576,000	3,380,998
2003	45,000	216,000	5,296,865	511,000	3,260,000
2004	43,159	203,000	5,226,519	477,567	3,105,458
2005	44,000	169,236	5,187,613	415,901	3,247,606
2006	44,000				

source: FAO/WFP, CFSAM, 2007 (modified)

International Humanitarian Assistance: Seed Aid

Against this background of acute, chronic and complex disasters, international aid has been abundant. Food aid has been distributed in most areas of Zimbabwe for much of the last 10 years, and continues in 2009, with an estimated 2.8 million needy. We briefly focus only on seed-related aid below.

Seed Aid

Overview

Emergency seed aid has been given in Zimbabwe during at least 15 of the last 29 years, since the country achieved its independence in 1980 (modified and updated from Rohrbach *et al.* 2005). The UN Food and Agriculture Organization first started keeping detailed records of such distributions in 2004, and Table 14 gives an idea of the overall magnitude of such emergency aid in recent years. Hybrid and OPV Maize, small grains and variously kinds of fertilizer have formed the base of emergency seed aid inputs (Table 15). Of particular note is the upcoming season, where the International Community is finalizing plans for direct supply of seeds and fertilizer ($140 million worth) for 600,000 smallholder farmers. This is one of the largest distributions in years and is being implemented after the productive harvest season of 2008/09.

Table 14: Emergency seed and fertilizer beneficiaries, Zimbabwe 2003-2009

Agricultural Season	Number of beneficiaries
2003/04	985,000
2004/05	422,000
2005/06	372,000
2006/07	315,000
2007/08	232,000
2008/09	310,000
2009/10	Projected: 600,000

source: UNFAO Information Unit , Harare

Table 15: Emergency Agricultural Inputs distributed (MT), Zimbabwe 2003-2009

Season	Top Dressing	Compound	Maize OPV	Maize Hybrid	Sorghum	Millet	Cowpeas	Groundnuts	Sugar Beans	Small Grains
2003/04	6,184	1,553	3,304	3,061	2,218	617	786	550		2,835
2004/05	4,866	962	1,972	291	776	71	545	66	175	847
2005/06	8,117	509	1,605	31	719	52	158	370	332	771
2006/07	7,120	1,929	696	175	706	276	312	737	251	982
2007/08	7,661	937	307	138	897	222	608	608	15	1,119
2008/09	10,222	5287	1,282	54	822	117	208	247	173	
2009/10	In progress									

source: UNFAO Information Unit, Harare

Types of seed aid given

A considerable amount of emergency seed aid in Zimbabwe has consisted of direct seed and fertilizer distributions and guidelines exist to improve this work (Rohrbach et al., 2004). New approaches have also been implemented, particularly in the last five to eight years. CARE International has considerable experience working with agro-dealers in Masvingo Province on seed assistance programs through vouchers (e.g. Musinamwana, 2009). Catholic Relief Services pioneered the use of Seed Vouches and Fairs (SVF) in emergency, starting in Zimbabwe in 2002 (Bramel and Remington, 2004; Mazvimavi, 2008) and NGOs, such as Plan International are implementing SVF even this season (2009/10).

The GOZ has also managed various kinds of input supply programs. For several seasons after 2006, the RBZ and GMB operated input distribution programs aimed at increasing food production: seeds and fertilizer were distributed throughout the country to newly resettled farmers in commercial farms and to communal farmers. In 2008/09, there were logistical problems resulting in late arrival and distribution of most inputs, some arriving in December and January. During the SSSA, we found 50% of recipients in Murehwa planted late in the 2008/09 season whereas in Bikita, many simply chose to keep the seed for the upcoming season. Also in Bikita, some of the distributed Kalahari Early Pearl (KEP) did not perform well, leading farmers to condemn OPVs. Because of the logistical challenges, it is possible that the maize had been mislabeled or mixed with grain.

One of the most important but little reported 'seed aid' programs is the local community assistance. This is probably because it lacks structure unlike the large seed aid programs, small quantities of seed are involved, and/or it is usually based on kinship. In the four districts visited during the SSSA, some resource-poor households who had not groundnut seed would work for neighbors and be paid half the quantity of seed they would have sown. This practice is probably widespread and forms the basis of the community seed system (see Section V, Coping Strategies.)

Overall, emergency seed aid is now a continuing form of assistance for Zimbabwe smallholders. GOZ input programs have also been implemented on an important scale

Concluding comments

Economic decisions, political events, health concerns and droughts have all combined to bring significant stress to the Zimbabwean people and to their economy.

The impact of these stress conditions on a growing number of Zimbabweans has been profound: drops in agricultural production, pervasive hunger and severe disruption of livelihoods. For a number of years, smallholder farmers have found it difficult to secure maize seed, fertilizer and chemicals because of their unavailability or high cost. Some have also been were forced to flee their homes due to political violence, leading to delayed or no cropping at all. Many continue to have problems mitigating the effects of climatic vagaries.

On the brighter side, the hardships experienced have facilitated the maintenance and growth of a robust community based and informal seed security structures (Section V) , helping to fill the supply gap created after closure of formal seed and fertilizer outlets. Also, as of July 2009, the inputs supply situation has improved slightly with stabilization of currency and re-opening of some outlets, though access to seed and fertilizer still needs to be significantly

expanded. The general feeling among traders is that prospects for economic recovery have improved with the formation of the GNU and start of liberalization programs.

For the 2009/10 season, The International Community is finalizing plans for direct distribution of seeds and fertilizer ($140 million worth) to 600,000 smallholder farmers. Even In the short term, there is scope for improving seed assistance delivery mechanisms to smallholder farmers that include supporting agro-dealers, and building on seed systems developed during stress periods. It is also time (or time is overdue) for contemplating exit strategies from protracted direct 'emergency' assistance and to blend these with high impact and sustainable development interventions.

It is in this context that the SSSA aimed to review what actually was happening on the ground: what did farmers plant, what were their results, what do they see as their prospects over the coming seasons?

V: SEED SYSTEMS IN ZIMBABWE: OVERVIEW

Smallholder farmers use multiple channels for procuring their seed. These channels fall within formal and informal seed systems (with the latter also sometimes labeled as the local, traditional or farmer seed system).[3]

The formal seed system involves a chain of activities leading to certified seed of named varieties. The chain usually starts with plant breeding, and promotes materials towards formal variety release. Formal regulations aim to maintain varietal identity and purity, as well as to guarantee physical, physiological and sanitary quality. Seed marketing takes place through officially recognized seed outlets, either commercially or by way of national agricultural research systems (Louwaars, 1994). Formal sector seed is also frequently distributed by seed relief agencies.

The informal system embraces most of the ways farmers themselves produce, disseminate and procure seed: directly from their own harvest; through gifts and barter among friends, neighbors and relatives; and through local grain markets or traders. Farmers' seed is generally selected from the harvests or grain stocks, rather than produced separately and local technical knowledge, standards, and social structures guide informal seed system performance (McGuire, 2001). In developing countries, somewhere between 80% and 90% of the seed sown comes from the informal seed system (DANAGRO, 1988; FAO, 1998), although this varies by crop and region.

What is important to highlight is that farmers themselves obtain their varied seed through both formal and informal channels.- and both merit express and serious attention. In Zimbabwe, for example, the same small farmers may routinely procure maize hybrids through formal seed systems (agro-dealers, commercial companies, government parastatals, and, sometimes, relief aid), groundnuts from their own harvest or local grain markets, and sorghum seed from their neighbors (van Oosterhout, 1996).

In the Zimbabwean context, the lines between formal and informal have started to blend, and to a degree the team has never seen before. As is usual, modern varieties of the self-pollinated crops have entered local channels, particularly for groundnut, cowpea, sorghum and pearl millet. But the breakdown of the formal sector has also meant that even hybrid maize (normally sold only in specialized shops), is now being moved in a series of more informal ways, for example, through barter from the seed bulkers and via direct sale by company employees.

Also of note is the development of a 'relief seed system' which has become of distinct importance on the supply side in many parts of Africa, and particularly in Zimbabwe. Relief seed aid has become repetitive in nature and involves a somewhat separate type of seed procurement and distribution network (Bramel and Remington , 2004).

[3] This introduction draws from Sperling *et al.*, 2008.

Figure 3 shows schematically the formal and informal seed systems (and their component channels) and how they may interact. Adapted from Almekinders and Louwaars (1999), the figure additionally highlights the importance of the local seed market and seed relief channels.

This section now moves to more detailed analyses of the seed system structures and processes currently in place in Zimbabwe. Information is also added of fertilizer inputs, and farmers coping strategies more generally. Issues linked with gender and seed security are highlighted at the end.

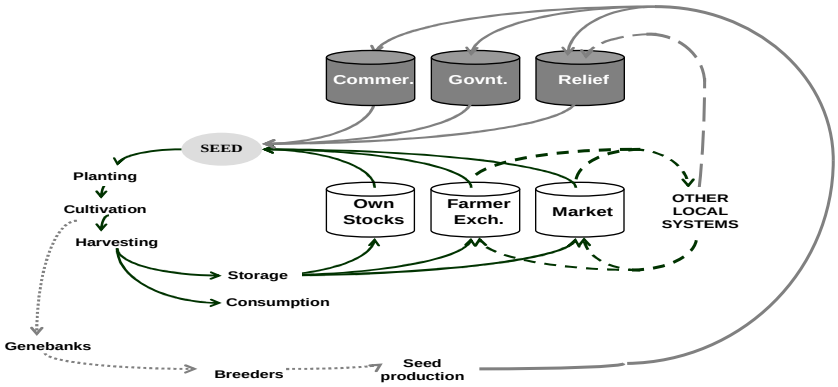


Figure 3: Channels through which Farmers Procure Seed. These are depicted by the cylinders: Own seed stocks, exchange with other farmers , and purchase through local grain markets constitute 'informal' channels, while commercial seed stockists, government or research outlets , relief supplies constitute formal channels. The arrows indicate the flow of seed in the 'informal' and 'formal' sectors respectively. Adapted from Almekinders and Louwaars (1999).

FORMAL SEED SYSTEM IN ZIMBABWE

Introduction

Zimbabwe has been long known for having an unusually well developed national seed industry. When functioning well, more than 15 companies were involved in the seed production and marketing of over 20 different crops (Takavarasha et al., 2005).

Maize is by far the most important production focus of seed industry and the only important food crop for which farmers are dependent on the formal seed sector. In the past, commercial seed companies have also sold seed of other crops, but these have been a minor focus relative to maize. Some of the commercial crops for which seed was previously sold included: wheat, barley, sunflower, soybeans and cotton. Staple food crops for which seed of improved varieties was also previously sold included sorghum, peal millet, cowpeas and groundnuts. Much of the seed of non-maize food crops had been produced by smallholder farmers working in conjunction with seed companies the Agricultural, Technical, and Extension Services (AGRITEX), NGOs and some international agricultural research centers. It was purchased from the farmers and sold primarily into the relief seed market (Bramel and Remington, 2004). Also, due primarily to collaborative efforts between the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and commercial seed companies,

sales of seed of improved varieties of sorghum increased from 281 mt in 1998 to 1102 mt in 2002. Sales of improved varieties of pearl increased from 7 mt in 2000 to 278 mt in 2002 (Heinrich, 2004)

Between 2006/07 and the beginning of 2009, the formal seed sector nearly closed due to price controls, inflation and currency constraints, and an unfavorable policy/regulatory environment. Most networks of contract seed growers had to be completely re-organized after the elimination of large-scale commercial producers. Further, essentially all retail seed outlets closed. However, with liberalization of the regulatory/policy environment and introduction of US$/ZAR (Rand) economy in the first quarter of 2009, most seed houses have been expanding grower networks, and are re-opening retail outlets. In addition, since about March of 2009, agro-dealers in urban and rural areas, and other retail outlets in the rural areas, have also started to open and stock agricultural inputs – especially seed of hybrid maize. These new initiatives are very important and hopeful--- but also very fragile.

Structure of Formal Sector variety and seed systems

Variety development systems

At the turn of the century, variety development systems for all important commercial crops were functioning well in Zimbabwe. There were several components to these systems. First, a number of seed companies had their own effective breeding programs, including SeedCo, Pannar, and others. In addition, there were several International Agricultural Research Centers (IARCs) that had offices and field programs either in Zimbabwe or in neighboring countries in the SADC region: these centers were also developing materials and making these available to national research systems and private seed companies. Two IARCs based in Zimbabwe that had active breeding programs were the International Center for Maize and Wheat (CIMMYT), and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the latter producing improved sorghum and pearl millet materials. A third component of the variety development system was the national Department of Research and Specialist Services (DR&SS) that maintained breeding programs for many of the major food crops including maize, sorghum, pearl millet, finger millet and pulses. These were housed in a unit called the Crop Breeding Institute (CBI). CBI was also responsible for coordinating a "Variety Release Committee" that met annually to review data submitted by their own breeders, or by private sector companies, in support of the release of new varieties for Zimbabwe. In addition to CBI, the Ministry of Agriculture maintained (and still maintains) a Seed Services unit. This unit is responsible for certification of seed for commercial sale, evaluations of seed quality, and the implementation of national seed regulations in general.

Variety development programs were significantly disrupted during the land reform process, in 2000. Some of the larger seed companies lost some or all of the farms on which they had been operating their breeding programs. Because of economic difficulties, some of the IARCs re-located their scientists and breeding programs outside of the country, and funding for DR&SS breeding programs also declined. Also, as price controls for seed (especially maize and wheat) came into effect, the whole profitability of breeding programs in-country became questionable, and a number of companies moved the majority of their breeding programs to neighboring countries.

Today, at least one company does maintain a limited breeding and research program in Zimbabwe, but most have moved the bulk of these operations to neighboring countries.

Released Varieties

Examples of the types and numbers of varieties of different crops that have been formally released in Zimbabwe and produced and marketed by the formal seed sector as of 2009 are presented below (Tables 16-20).

Table 16: Released maize varieties

Maize by type	Number of seed companies	Number of released varieties	Years of release
White hybrids	7	83	1970 -2008
Yellow hybrids	7	18	1970- 2007
OPVs	2	8	2003- 2008

Source: P. Setimela, CIMMYT, Zimbabwe – presentation, Harare, June 2009

Table 17: Released sorghum and pearl millet varieties

Crop	Variety Name	Date of release (where available)
Sorghum	DC75	NA
	PAN88	NA
	NS551	NA
	SV1	1987
	SV2	1987
	SV3	1998
	SV 4	1998
	Macia	NA
	ZWSH 1 (Hybrid)	1992
Pearl millet	PMV1	1987
	PMV2	1992
	PMV3	1998
Finger millet	FMV 1	1992
	FMV 2	1992

Source: P. Setimela, CIMMYT, Zimbabwe – presentation, Harare, June 2009; Heinrich 2004

Table 18: Released bean varieties and sources of seed

Variety	Source
Iris	CBI
Nandi	Pannar
Pan 148	Pannar
Bounty	SeedCo
Speckeld Ice	Progene seeds
Cardinal	Progene seed

Source: P. Setimela, CIMMYT, Zimbabwe – presentation, Harare, June 2009

Table 19: Released cowpea varieties and source of seed

Variety	Source
CBC1	CBI
CBC2	CBI
CBC3	CBI
PAN311	CBI
IT18	SeedCo

Source: P. Setimela, CIMMYT, Zimbabwe – presentation, Harare, June 2009

Table 20; Released varieties of groundnut and sources of seed

Variety	Year of release	Currently in the market	Source
Falcon	1990	Yes	CBI
Flamingo	1982	Yes	CBI
Jesa	1999	Yes	CBI
Ibanda			CBI
Tern	2005	Yes	CBI
Natal Common	-		CBI
Nyanda	-	Yes	SeedCo
SC rion	-		SeedCo

Source: P. Setimela, CIMMYT, Zimbabwe – presentation, Harare, June 2009

Adoption of improved varieties

Adoption of improved varieties of maize in Zimbabwe is higher than almost any other African country (Table 21). Over 80% of the maize area in the country was planted to hybrids in 2006/07 and nearly 10% was planted to recognized open pollinated varieties. The promotion of OPVs is ongoing- but development agencies and farmers are split about whether they represent a viable option (Box 3) and *whose* option (Box 4). Part of the challenge is indoctrination: for years it was 'near illegal' to plant OPVs as the government was trying to boost food self sufficiency through hybrid use intensification. Government policy in 2002 reinstated OPVs.

Table 21: Estimated maize seed supply and need in eastern and southern Africa

Region/country	Maize area (x mil ha)	Estimated seed need(x 1000 MT)[1]	Improved OPV maize seed sales (x 1000 MT) 2004/05	2005/06	2006/07	Hybrid maize seed sales in 2006/07 (x 1000 MT)	Adoption rate 2006/07 (as % of maize area)[2]	Adjusted adoption rate in 2006/07 (as % of maize area)[3]
Eastern Africa	**6.6**	**161.8**	**4.0**	**3.5**	**11.1**	**42**	**33 (23)**	**37**
Ethiopia	1.7	42.4	0.4	0.4	2	6.2	19 (8)	21
Kenya	1.6	38.9	0.6	0.1	1.7	26.3	72 (71)	74
Tanzania	2.6	64	0.6	2	3.9	7.3	18 (4)	22
Uganda	0.7	16.5	2.3	1	3.5	2.2	35 (9)	54
Southern Africa	***5.4***	***133.4***	***9.3***	***9.8***	***12***	***38.5***	***38 (28)***	***52***
Angola	0.8	19.3	0.8	0.1	0.8	0.2	5 (12)	10
Malawi	1.4	35.3	5.2	4.5	5.4	2.5	22 (14)	50
Mozambique	1.2	30.3	1.2	2.2	3.1	0.2	11 (9)	22
Zambia	0.6	14.1	0.3	1	0.5	9.7	73 (23)	81
Zimbabwe	1.4	34.4	1.8	2.1	2.2	25.9	80 (82)	93
Total/average	**12.0**	**295.1**	**13.3**	**13.3**	**23.1**	**80.5**	**35(26)**	**44**

Note: [1]Estimate based on area and planting rate of 25 kg/ha.

[2]In parentheses are figures observed in 1997 by Hassan *et al*. (2001). Only seed sales in 2006/07 were used in the estimation.

[3]Adjusted for OPV sales in 2004/05, 2005/06 and 2006/07 assuming that similar quantities purchased in the first two years were recycled in 2006/07. That is, total improved OPV seed planted is aggregated over 2004/05, 2005/06 and 2006/07. Note that total area under improved maize varieties is 4.2 million ha (0.92 million ha under OPV) before and 5.3 million ha (2 million ha under OPV) after adjustment with previously purchased OPV seed.

Source: DTMA seed sector survey, 2007/2008

BOX 3: ARE OPVS REALLY INFERIOR TO MAIZE HYBRIDS?

Yes, to some extent, but not to a smallholder farmer who may lack the necessary cash to purchase hybrid seed and fertilizers on an annual basis . In an effort to protect the seed maize industry in Zimbabwe, it was almost 'illegal' for extension to be seen to be promoting OPVs until the early 2000s.

Data from multi-locational trials in fourteen sites over two seasons show the following: the performance of OPV is comparable to hybrids with or without fertilizer.

Variety	**Description**	**Average yields (t/ha)**	
		With fertilizer	**Without fertilizer**
SC 513	Early hybrid	3.15	2.26
ZM 351	Early OPV	2.87	2.00
Difference		0.28	0.26

Source: Muungani et al. 2007

Consider the cost of hybrid seed (US$ 50/ha) and the fertilizer cost (US $155/ha). What is the value of the additional yield? The value of the marginal increase in output with fertilizer is $68.88 and without fertilizer is $63.96.

Are OPVs therefore an option for cash-strapped farmers? Some farmers are beginning to think so—but adoption has been slow.

BOX 4: OPEN POLLINATED VARIETIES: WHOSE OPTION?

Zimbabwe is a maize country. Most of the farmers grow maize regardless of the environmental context. The Seed Systems Security Assessment covered for of the five Natural Regions in the country, that is, Murehwa (NR IIB), Bikita (NR III), Tsholotsho (NR IV) and Beitbridge (NR V), and maize was among the first four most important crops in spite of records of failure in NR IV and V. Although maize is not the most important cereal in drought prone marginal areas, farmers still grow maize as back up for drought-tolerant crops such as sorghum and millet.

Hybrids were introduced in Zimbabwe in the early 1900s (Bourdillon, *et al.,* 2002). Southern Rhodesia 52 (SR 52) was the first hybrid variety to be released in 1960. This was followed by R 201 and R 215 released in late 1960S. There has been deliberate promotion by extension to promote the hybrids based on the attributes of high yield, pest resistance and environmentally- specific adaptation. SeedCo, one of the leading seed houses in Zimbabwe has to date released more than thirty different varieties of which two are OPVs (Matuba and Obatnapa). Other seed houses such as Pioneer and Pannar have released more than forty different hybrids.

CIMMYT has released two OPVs ZM 421 and ZM 521. While there is some initial OPV adoption, the message from the communities is that still prefer using hybrids, and many farmers still have little understanding of OPVs. Most communities have their own traditional local varieties such as 'garabha' in Murehwa, 'bhabhahla' in Tsholotsho and 'Hickory king' in Bikita. Communities tend to grow their local varieties in times of seed crisis. Some farmers even recycle grain from hybrid seed harvest (F2) as a coping strategy.

Although OPVs are a better option for farmers in remote areas, with little access to formal sector seed, farmers tend to be 'obsessed' with hybrid seed across the country. Without much information, farmers will take time to appreciate OPVs ---- despite the fact that smallholder farmers are often more interested in low costs of inputs rather maximum yields, a preference that should influence the development of policies.

There is also adoption of improved varieties of other important cereal crops. By 2000, approximately 30% of the area planted to sorghum, and 27% of the area planted to pearl millet in Zimbabwe was planted with improved varieties (Partnerships for Progress: the SADC ICRISAT Sorghum and Millet Improvement Program. www.fao.org/docs/eims/upload/206572/1_3_4 cases.pdf. July 2009).

Certified seed production systems

Certified seed programs in Zimbabwe have to a large extent focused primarily on maize. All other crops have been somewhat secondary, though there prior to 2000, there was some production of certified seed for commercial crops like sunflower, soybean, and for a limited time – sorghum, pearl millet, finger millet and cowpeas. A decade ago, most seed companies worked through outgrowers in the large-scale commercial sector, though some also had their own seed production farms. At least one company (SeedCo) worked with national and

international research institutes to produce certified seed of small grains and cowpea seed through smallholder farmer groups.

Certified seed production systems suffered during the land reform process. Initially, most of the large seed production companies (e.g., SeedCo, Pioneer, Pannar) had large in-country seed production programs. In a recent interview with one large international seed company at their main seed processing plant in Zimbabwe, the manager indicated that before the land reform process, the company used to produce seed in Zimbabwe and export it all over southern Africa. Today, they produce a limited amount in country and have become net importers.

Most of the major seed companies continue to produce certified seed in Zimbabwe, though the amount produced is less than the national requirement. Challenges to increasing seed production have included the following:

- There are concerns about price. In the past the price of seed (especially maize and wheat) was fixed by the government, which made it un-profitable for the out-growers to produce seed and sell it to the companies. There are also concerns that any seed produced could be requisitioned by government, at any time, to support large scale inputs distribution programs.

- With the loss of the large-scale commercial farmers, seed companies have had to establish new networks of out-growers. These new seed producers need time to gain the necessary experience and expertise. They also had much smaller amounts of land, which means seed companies have had to contract more growers, and this significantly increased their transaction costs.

- Before the introduction of the use of the US dollar, the inflationary environment made doing business in general extremely challenging. (e.g. Table 22 summarizes maize prices over a six-year period, 2003-2009)

Table 21: Maize prices 2003-2009

Year	Maize for 25 kg/ha	Wheat for 100 kg/ha	Sorghum for 10kg/ha	Groundnuts for 100kg/ha	Sugar beans for 90 kg/ha
2003	4313	15000	2944	103500	107640
2004	14000	450000	150000	190000	150000
2005	610000	585000	343000	750000	270000
2006	1620000	7150000	210000	5000000	2160000
2007	125000	100500	2400	236000	450000
2008	250000000	---	75000000	500000000	2250000000
2009	35	120	11	50	100

Source: Zimbabwe Ministry of Agriculture: Economic and Marketing Department

Notes:
The prices are given on the basis of seed required pre hectare of crop planted. Prices from 2003 to 2008 are in Zimbabwean dollars and those for 2009 are in United States dollars. Note that after, 2006, some of the zeros were removed from currency denominations.

Because of the hyper inflationary environment prevailing at the time budgets were done, the seed prices given are those for the month of July each year.

However, in the new regulatory environment, certified seed production systems are again re-starting and scaling up. One seed company indicates that they have produced 4,000 metric tons this year through their new growers, and that these growers are gaining in experience and average seed yields per hectare are improving. Another company, Agri Seeds, will have 5000-6000 mt available (up from 1200 mt in 2007/08). A Food and Agriculture Organization Coordination meeting also suggested an overall 23,550 mt estimated current inflow to seed houses (FAO communication 14 May 2009).

It should be noted that the Seed Unit in DR&SS is still able to support these processes. There is an opportunity now, if the economic environment remains stable, to significantly expand the amount of maize seed that is produced in Zimbabwe – and perhaps seed of other crops as well. Having an initial supply of foundation seed will be critical.

As yet there is no indication that private sector seed companies have a strong interest in producing certified seed of open pollinated varieties (OPVs) of maize (one exception being Agri Seeds) , or of any of the important self-pollinating cereals or pulses (sorghum, millets, cowpeas, groundnuts, soybean, etc.). The availability of certified seed for any of these crops is likely to remain problematic for some time to come unless new strategies to promote sales of these crops are developed and supported by the private sector (e.g., small pack sales of new varieties, as is done in East Africa). Nonetheless, there is great potential for certified seed production of these "orphan" crops, as has been demonstrated by the seed production efforts of the Farmer Field Schools (FFS) in Tsholotsho this past season (see Section VIII). FFS farmers produced over 100 mt of good quality seed of open-pollinated crops in 2008/09 (see the site report on Tsholotsho for further details).

Outside country developments of key importance for seed security

Many of the larger private sector seed companies operate throughout the southern Africa region, and not just in Zimbabwe. Some of these include SeedCo, Pioneer and Pannar. Thus there are significant linkages between seed companies in Zimbabwe and operations in neighboring countries. In particular, South Africa is a major seed producer. Some companies also produce seed for Zimbabwe in Zambia (e.g. SeedCo has a large processing plant there). In a recent discussion, one major seed company indicated that it would take about four weeks for them to get certified maize seed from their counterparts in South Africa, from the time the order was placed until the seed arrived. They also indicated that they could import almost any quantity required , and very quickly. It is likely that most of the major seed companies could import significant amounts of certified maize seed as well [with a focus on non-genetically modified (GMO) seed]. The potential to import seed of other crops would be less certain, especially for varieties formally released in Zimbabwe.

Summary: Formal seed sector development over the last 5-10 years

The loss of large-scale commercial out-growers following the land reform process in 2000 caused significant disruption to the certified seed production systems of the private sector. Following this process, the seed companies had to switch to new, more numerous, smaller-scale, out-growers. It took time for the new seed producers to learn how to maximize both production levels and seed quality. At the same time, the seed companies needed to work with larger numbers of farmer-growers (due to reduced farm sizes), which led to increased transaction costs associated with more fragmented seed production.

From about 2002, price controls started to come into effect for both grain and seed of some major crops (especially maize and wheat). This had a significant impact on what the seed

companies could afford to pay the seed growers, which in turn led to production dis-incentives and/or side-selling.

Price controls for maize and wheat grain also in turn affected demand for inputs including seed and fertilizer. The regulation that all maize grain had to be sold to the government-controlled Grain Marketing Board at a fixed price created a dis-incentive for commercial production. This situation prevailed roughly from 2003-2008.

Due to increasing control of prices of commodities, there has been significant growth of what became known as the 'informal sector'. Major commodities (including hybrid maize seed, maize grain, other food commodities and fertilizer) were often available in the "informal" sector at prices significantly above the 'controlled' prices when they were not available from the 'formal' sector.

In the 2007/08 cropping season, the government implemented a large seed and fertilizer distribution program. The government had set the price at which maize seed could be sold, and there was considerable pressure on all seed houses to provide essentially all of the maize seed they had produced in-country to the government at the gazetted prices. The seed houses necessarily complied, but were generally not happy with the fact that the price was fixed. They were paid with large amounts of Zimbabwe dollars which were devaluing at exorbitantly high rates.

There have been large donor-supported seed and fertilizer distribution programs in Zimbabwe since 2004 (and earlier). The vast majority of seed produced by the seed companies was delivered to farmers either through NGO or government relief programs.) The next most important source of certified maize seed for farmers in the last few years has been through the "informal' market channels. Formal commercial retail markets for maize seed and fertilizer have been essentially non-existent for the last two cropping seasons.

Recently (Feb-May 2009) the re-liberalization of the market environment for both certified seed and fertilizer, and for the sale of output commodities is creating new opportunities to get businesses up and running again. For example, stores in Murehwa that used to sell agri-inputs just started re-opening in March 09. The outlet for SeedCo in Murehwa opened on July 10, 2009 for the first time in more than two years. At the time of the survey they had 15 MT of certified hybrid maize seed in stock.

Most of the major seed companies are also still functioning in Zimbabwe, albeit at much reduced levels compared with 10 years ago. So there is now an important opportunity to re-establish the formal seed sector and related retail market networks in the country. This potential recovery is still fragile, and needs to be encouraged with appropriate support. The right kind of relief programs at this time – ones that promote rather than compete with the formal seed sector and retail networks – could be extremely valuable in jump-starting the recovery. Conversely – relief programs that compete directly with the retail sector (e.g., direct seed distribution) could be quite detrimental.

It should also be noted that farmers could benefit from having access to good seed of appropriate improved varieties of other important food crops beyond maize (e.g., groundnuts, cowpeas, beans and cereals such as sorghum, pearl millet and finger millet). It would be useful to consider the re-establishment of some of the effective smallholder farmer-based seed production systems for these crops that were functioning before 2000. It

would also be useful to promote the re-establishment (or in some cases – new development) of retail market networks for these crops.

INFORMAL SEED SYSTEM IN ZIMBABWE

Introduction

Sorghum, pearl millet, groundnuts, cowpeas, Bambara nuts, sugar beans and sweet potato constitute the bulk of crops that are important in the informal seed sector in Zimbabwe. Others include open pollinated maize varieties, soybeans, sunflower, white beans and finger millet. Except for maize, the informal sector supplies over 95% of the seed Zimbabwe farmers sow. The informal sector includes all the ways framers themselves produce and dissemination seed, through own stocks, barter/gifts and markets, with gift-giving being remarkably extensive in Zimbabwe (see Section VIII). Sources of seed sold in informal channels will vary according to the size of the market. In big markets, such as those in towns, seed might come from distant farming areas in outer lying districts, provinces and even across boarders. In smaller markets the seed usually comes from local farming community.

Of late due to the collapse of the economy and the resultant shortage of maize seed in the formal market, hybrid maize has also made inroads into the informal markets. In this case hybrid maize bought in 10kg, 20kg, 25kg or 50kg packs is repackaged into smaller packets of 2kg and 5 kg and sold in the informal venue – from trucks or open market stalls. In the same manner, hybrid maize seed, used to pay employees of some seed companies, has found its way into the informal market.

It is these informal markets which have been the backbone of seed provision during these years of stress in Zimbabwe. The informal seed system has moved its normal range of crops, which are key for production stability and nutrition, and many of which are associated with women. Unusually, the informal sector in Zimbabwe in recent years has also been the prime deliverer of the formal seed sector crop--- maize. All this has happened in the absence of significant financial or legal support.

Special ways of moving crops and varieties through the informal sector

Many trends have helped the informal sector in Zimbabwe remain stable and unusually dynamic, partly as numerous specific links exist between the informal and the formal seed sector systems. In normal times, when trials and crop demonstrations are a common feature with the public, private sector and International agricultural institutions, new and improved varieties have entered the informal channels on a consistent basis and in multiple ways. The following are some of the special ways crops and varieties have moved (and still move) through the informal sector.

Institutional channels Participatory variety evaluations (PVS)

In order to guide variety development programs, both private and public, farmers are sometimes invited to their research stations to evaluate varieties that are being developed. In the past, farmers have sometimes asked for and been given either a few heads or small quantities of the variety material to take back with them. Such material has been planted on

a small scale first and, if it showed some traits that farmers were interested in, spread in the communities through gifts, exchanges and sales--- particularly for small grains. Traits farmers may particularly value include: early maturity, tolerance to mid season dry spells and droughts and high yield gains. A good example of such spread is the pearl millet variety Okashana, released in Namibia but multiplied by farmers in Tsholotsho before it was even released in Zimbabwe.

On-farm trials

As research institutions such as DR&SS, ICRISAT and others have conducted both agronomic and variety on-farm trials. Some of the material used in the trials, has found its way into the farmers' fields in subsequent seasons. If such material performs well, it spreads very quickly in the community through gifts, exchanges and sales.

Field days that are held on sites where the on-farm trials have been conducted also help the spread of such material, even beyond the hosting community . Through field days, farmers have learned about new materials, increasing their demand for the materials.

In the same manner, variety demonstrations carried out by extension to compare old or local varieties with new or improved varieties have also helped channel varieties into communities.

Cross border trade

Some materials find their way across borders. These are usually moved across borders by cross border traders, middlemen or by people who visit some relatives in neighboring countries. Examples include some varieties of sweet potato that have found their way into farmers' fields in Murehwa from Mozambique and Malawi, some maize varieties that have found their way into the Zimbabwe from Botswana and South Africa.

(Note that organizations such as FEWSNET carefully document informal grain trade. It might be equally useful to map cross border variety and seed trade)

Locally-based multiplication programs

Some concerted, community based seed multiplication programs also have helped multiply seed on a novel scale.

Farmer Field schools (FFS)

Farmer Field Schools started in Zimbabwe in the 1996/97 season with a program on Integrated Production and Pest Management, (IPPM) otherwise commonly known as Integrated Pest management (IPM). In 2003/2004 season, FAO sponsored some FFS on Integrated Soil Nutrient and Water Management (ISWNM). Farmers in these FFS were also trained in the multiplication of pearl millet, sorghum, cowpea and groundnut seed. The FFS schools multiplied seed as a group and as individuals.

In Tsholotsho, the number of FFS multiplying seed grew from 6 in the 2003/04 to 46 in the 2008/09 season. The quantity of seed multiplied by these FFS also grew tremendously. In the 2003/04 season for example the FFS produced 14.5 mt of pearl millet seed and this increased

to 84mt in the 2008/09 season. Groundnut seed production increased from 10.2mt to 28mt in the same period.

In the past, the same FFS were contracted by SeedCo- a seed house to multiply pearl millet and sorghum seed for them for four seasons. The Grain Marketing Board also contracted the same farmers to multiply the same crops. By July 9, 2009 Agri Seeds had already purchased 30 mts of cowpea seed from just one community . It is worth noting that about 75% of the pearl millet and sorghum multiplied by the FFS is sold outside the Tsholotsho district. The remainder is sold at seed fairs or at the household level. All the groundnut seed produced by the FFS is sold locally.

Other community based multiplication schemes

There are other community based seed multiplication efforts other than FFS. These are either group or individual efforts. In Murehwa for example farmers multiply their own sweet potato seed. The Zhunde Ramambo (Chief's granary) concept where a group of farmers produce grain on a field provided by the chief is also being practiced in Murehwa. This grain can also be used as potential seed when seed is in short supply especially following droughts.

Seed Assistance

Special seed related assistance has also had impacts in introducing new varieties of different crops, conserving local landraces and providing seed in times of possible seed stress. The following programs have been prominent in this regard.

Seed fairs

Seed fairs, where farmers are given seed vouchers to purchase seed were started by CRS in 2002. These were later continued by such organizations as Care International, ICRISAT and Plan International. Seed fairs are implemented in various forms. In some cases farmers and agro-companies bring seed and other inputs to sell at the 'fair', that is, a temporary dedicated venue where voucher holders and potential seed sellers are brought together. This is the model used in CRS and Plan International organized seed fairs. Another version is used by the Care International: farmers are given vouchers to purchase seed and other inputs from agro-dealers (see Mazvimavi *et al*. 2008).

Seed banks

Programs to conserve and preserve genetic material of local landraces (including traditional vegetables) help such materials to remain in dynamic, in use-- and prevent total loss of genetic resources. Such material can be used in further development of varieties or given back to communities to plant in times of seed stress. COMMUTECHH started such seed banks soon after independence, in the early 1980s.

Direct Seed Distribution

Many NGOS and the GoZ have been involved in direct seed distribution, at least every two to three years since independence in 1980 (and every year of the last five years) . These programs sometimes introduce farmers to new varieties. In the SSSA, specific follow-up showed that 'emergency' seed distribution has been more important than normal

development and extension programs in diffusing new varieties. New varieties of maize, sweet potatoes, cowpea, groundnut, pearl millet and sorghum have all been introduced through emergency programs (see Section VII for specific statistics.) It might be seen as unfortunate (and unwise) that emergency programs are being used for variety introduction. Such introductions should be accompanied by honed technical advice and multi-season follow-up. These are not skills and activities which emergency providers necessarily possess.

Summary: Informal Seed Sector

The informal seed sector has played an important role across Zimbabwe and especially in the Semi Arid Areas of Zimbabwe (SAAZ) where the majority of smallholders farm – and where much of the emergency seed aid unfolds. The informal sector has remained dynamic through new variety introductions and skill- building related to seed production. It has also continued to produce the lion's share of all seed—except for hybrid maize. Preliminary efforts to connect informal seed production with private seed companies have been promising. Experience shows that farmers can produced high quality seed and in impressively large quantities.

The crops produced by the informal sector provide important production stability and nutrition balance for most farming families. The sector could be an even important source of better quality seed across a large range of crops, and on a sustainable basis, if it were given modest financial, technical, and business development support. The need to further strengthen and professionalize the informal seed sector in Zimbabwe is discussed in Sections VII and VIII. The informal sector has been too long overlooked by donors and formal seed industry specialists. It represents an economic and livelihood opportunity –and has great unrealized potential to contribute further to seed security and to food security.

RELIEF SEED SYSTEM

The presence of a *relief seed system* needs to be signaled as it is flourishing across much of east and southern Africa and particularly in Zimbabwe. Basically the relief seed system is a relatively new term (Bramel and Remington, 2004), coined to recognize the very real phenomenon of seed supply systems geared mainly to feed the repeated emergency seed distributions. The functioning of such relief systems involves a clear set of steps: a disaster is declared, seed need is assumed, and then a well-established chain of suppliers moves into action. Such systems are completely dependent on the continuing of such crises for their financial solvency.

The relief seed system is presently in full gear in Zimbabwe for the 2009/10 season. About 23,550 mt of maize has already been identified for free distribution, along with 4090 mt of soybean and modest quantities of sorghum (950 kg) and wheat (943 kg). (FAO Coordination Meeting among Zimbabwe Seed Houses, 14 May 2009).

While beneficial for the supplier, who markets large quantities of a few crops and with few transactions, free distribution of seed , given repeatedly has been shown to have negative effects, across African countries (Sperling et al, 2008). Repeated free distribution denies markets to seed/grain traders (Rohrbach *et al*., 2004; Walsh *et al*., 2004), and, it comes to be expected, it also constitutes a perverse incentive and undermines local seed acquisition practices. A good number of Zimbabwean farmers interviewed asked that free distributions

be stopped-- they saw them creating changed behavior-- and sometimes being used as a political, rather than needed agricultural tool. Repeated distribution of seed can not only be detrimental, but it fundamentally also signals that the seed security problem being addressed has probably been misdiagnosed.

Fertilizer production and distribution in smallholder areas

Fertilizer is frequently used as a complement to seed, even by small holder farmers. The SSSA could only touch of important fertilizer-related issues, both here in the background analysis, and also in field investigations (section VII).

About 70% of the chemical (inorganic) fertilizers used in Zimbabwe have traditionally been manufactured locally with a few of the raw materials such as potash being imported (IDC, 2008). Supply of ammonium nitrate, the main source of nitrogen, is often supplemented through importation of urea. Annual deficits in the top dressing fertilizer are about 20,000 mt. About 52% of the fertilizer supply does go to the smallholder sector (Table 23), and over 80% of this fertilizer is allocated to maize.

Table 23: Traditional typical hectarage and demand (mt) for different fertilizer types in Zimbabwe

Crop	*Typical Historical Hectarage*	NPK Compounds	Ammonium Nitrate	Total Fertilizer Demand
Commercial Maize	*240 000*	60 000	60 000	120 000
Small Scale Maize	*1 200 000*	50 000	80 000	130 000
Soybean	*70 000*	10 000	-	10 000
Cotton	*330 000*	15 000	15 000	30 000
Tobacco	*200 000*	80 000	40 000	120 000
Other Crops	*300 000*	40 000	30 000	70 000
Summer Crops	*2 340 000*	255 000	225 000	480 000
Winter Crops	*80 000*	45 000	35 000	80 000
TOTAL Demand	***2 420 000***	**300 000**	**260 000**	**560 000**

(Source: Windmill & ZFC unpublished reports)

Over the past decade, there has been a decline in fertilizer production in the country. Production of ammonium nitrate has declined from 250,000 mt in 1999 to less than 75,000 mt in 2008 (Figure 4,top), while production of phosphate (P_2O_5) declined from 40,000 to less than 10,000 over the same period (Figure 4, bottom). This decline has been attributed to the following factors by the major manufacturers:

- Forex shortages
- Price controls
- Electricity shortages and unreliable supplies
- Coal Shortages
- Brain drain and skills shortages due to various economic challenges

Consequently, availability of fertilizer on the market has been severely limited, driving prices beyond the reach of most smallholder farmers. The decline in production has also meant that even initiative of government and other development agencies could not acquire sufficient quantities of fertilizer to meet identified relief programs from within country stocks.

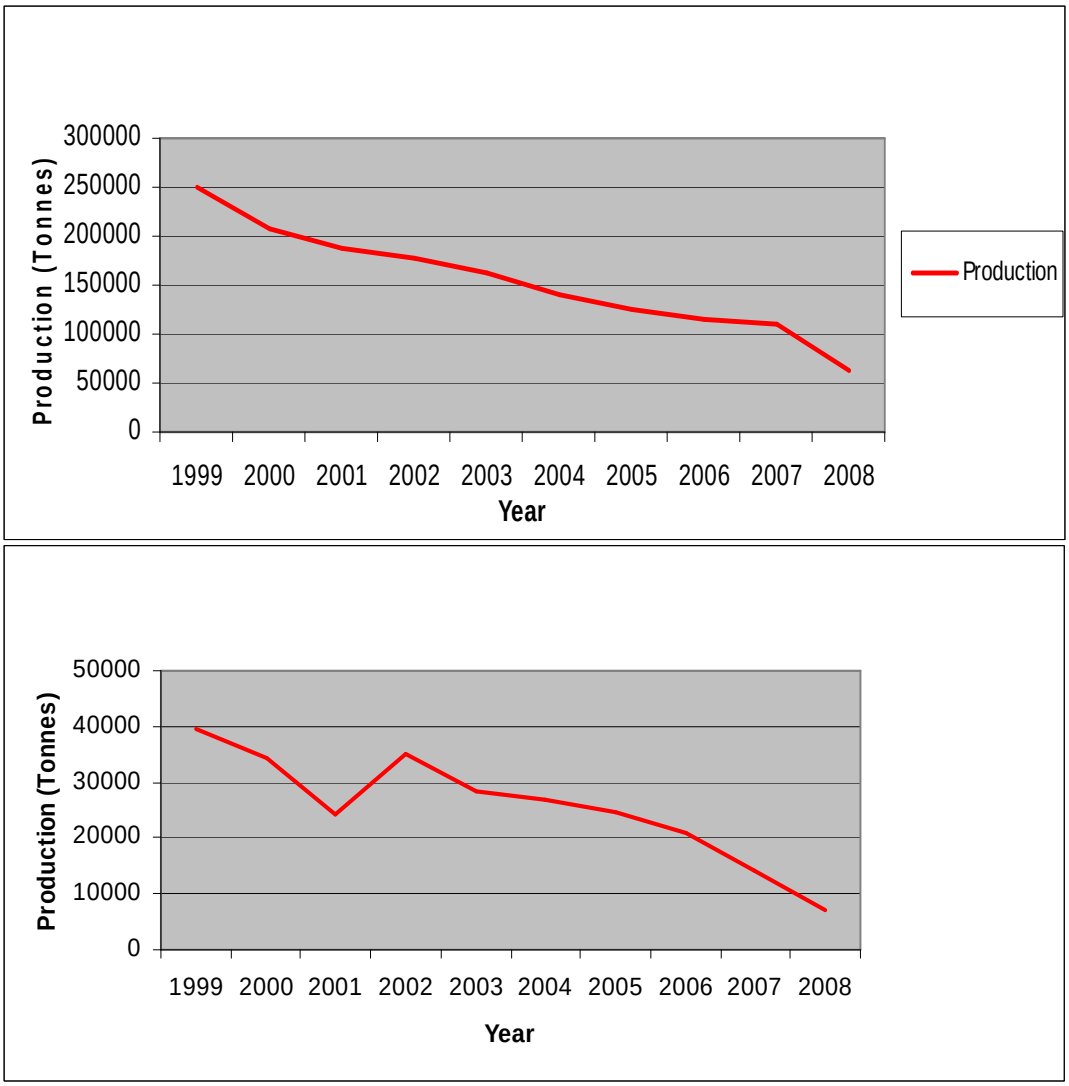


Figure 4: **Trends in the manufacture of *ammonium nitr*ate (t*op graph*) and *phosphate* (P_2O_5) (*bottom*) fertilizers in Zimbabwe between 1999 and 2008**
(Source: Windmill & ZFC unpublished reports)

A major source of response to the shortage has been importation, but significant quantities were only imported in between 2005 and 2008 (Figure 5). The decline in production has also been associated with withdrawal of sales offices that traditionally provided services to farming communities. A major consequent of the decline in production patterns has also been the reduction in the range fertilizer types. The most predominant fertilizer types that remained on the market were the basal Compound D and ammonium nitrate top dressing fertilizer, both for maize. However, a major challenge was also the lack of timely supply of the fertilizers. While farmers in areas such as Murehwa had relatively high chances of accessing

the limited fertilizer on the market, those in remote areas such as Bikita were most adversely affected. The problem was compounded by the non-existence of manufacturing capacity in neighboring countries (excluding South Africa), which hitherto, had depended partly on supplies from Zimbabwe. Only very modest supplies of fertilizer were available within the country through informal channels.

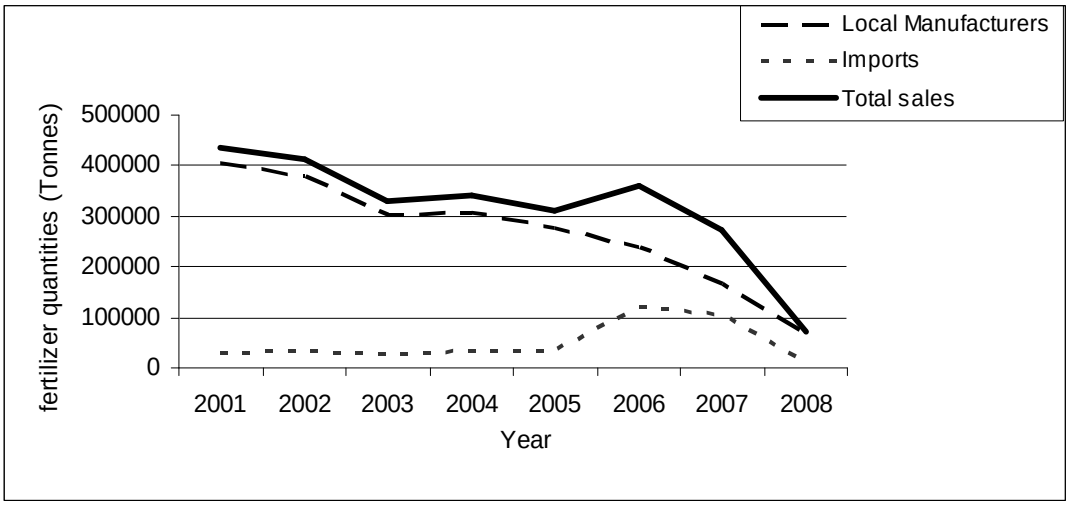


Figure 5: Patterns in locally manufactured and imported inorganic fertilizers in Zimbabwe between 2001 and 2008
(Source: Windmill & ZFC unpublished reports)

The SSSA team found fertilizer supplies starting to be available, for the farmer buyer, during the July 2009 assessments. Price was the compelling constraint. Using barter economy rates, the price has gone up five-fold in but two to three years. Using the barter prices from Murewha: a 50kg bag used to cost 3 buckets of sweet potatoes; in July 2009, it cost the equivalent of 15 buckets (see Box 13).

COPING STRATEGIES AND EMERGENCE OF A BARTER ECONOMY- TO ACCESS SEED

We now turn to the focus to farmers strategies for input acquisition, and especially for seed. Farmers in Zimbabwe have long had a series of coping strategies for accessing seed related to drought, However, in the last few years, a new set of coping strategies related to accessing seed has emerged, some associated with increasing poverty, but many surfacing due the unstable currency (Zimbabwean dollar), or scarcity of currency notes altogether (US$).

In terms of *responding to increasing poverty*, several seed sourcing strategies are remarkable :

a. *Maricho* (piece work or casual labor) usually but not exclusively for agricultural tasks such as weeding, planting harvesting. Although *maricho* are usually undertaken within the local community, farmers are also now going to outside communities, including small-scale commercial farming areas, to look for this type of work. In instances where needy farmers are engaged to weed or plant, it means that their own fields will be attended to

later, often when the rains have advanced. Therefore, there is a good chance of casual workers getting a low harvest, even if the rain season is good.

b. Sharing seed obtained as aid or exchanging it for other types or varieties of seed.

c. Occasionally (rarely?) farmers select and sowing maize seed from grain issued by NGOs as food aid rations. This may be done by both primary beneficiaries and non-beneficiary community members who have acquired grain from recipients of food aid. (In this SSSA, the food aid contribution to actual maize seed planted was negligible, just 2.4% of total seed sown- see Table 32).

The *currency dilemma* combined with increasing poverty is also affecting means of obtaining seed. Novel coping strategies include the following:

d. Barter trade, particularly in the last five years. Farmers exchange commodities such as crops and small livestock for seed. Units of measure vary in size but the most common are 400ml tea cups, 5 liter containers and 20 liter buckets. Although this practice is largely confined to the local community, outside traders may also barter on a larger retail level. e.g. In Beitbridge, the team found traders obtaining large amounts of second-hand clothing (and soap, empty containers) so as to exchange such clothes for seed procured from the surrounding farming areas.

e. Obtaining seed through exchange with groceries and clothing sent as remittances by relatives working outside the country (e.g. South Africa and Botswana)

Most recently, the adoption of the multi-currency (US$, ZAR, Pula etc) has presented its special set of challenges. In the rural countryside, (and indeed nearly everywhere), US currency notes are hard to find, particularly the smaller denominations- ($1, $2, $5, $10) which would be used by the small farmer to buy seed. Hence, re-packing of seed and fertilizer in smaller units has also emerged and barter trading and/or commodity exchanges assumed more importance. For example in Bikita, Reapers, an agro-marketing company, was reported to be procuring maize grain from local farmers in exchange for both basal and top dressing fertilizer. Agro-dealers in Murehwa were repackaging fertilizer in 1kg packs and selling it at $1.00 per kilogram.

In normal situations, farmers buy their agricultural inputs soon after harvest, after selling their produce. However, with the adoption of foreign currency which is still in short supply, many farmers are finding it difficult to raise enough money for the agricultural inputs they require. Moreover, local prices for produce are comparatively low. In Murehwa and Bikita farmers were selling maize grain for US$2.00 while in Bikita it was R20.00. This means, for example in Bikita, where 5kg maize seed cost between R145 and R150, a farmer has to sell 7-8 buckets to raise enough money for 5kg maize seed.

Finally, not all coping strategies are necessarily effective. Pervasive use of coping strategies can sometimes lead farmers into agricultural decline ((see case example in Box 5).

BOX. 5. COPING OR CRIPPLING STRATEGIES?

MaDawu , a 65 year-old widow, resides in Tsholotsho, with her unmarried daughter and her minor children. On the day her husband died, five years ago, his relatives came to collect her family's 5 head of cattle-- but left her to continue farming and living in the home she had built with her husband.

Because she has no draught power and tills her field by hoe, MaDawu cannot produce adequate food for herself and her dependents. To supplement their harvests, she and her daughter take-up *maricho* work all year-round. During the agricultural season, the pair engages in tasks such as planting, weeding, harvesting, guarding crops against birds and winnowing. They sleep out of the homestead at least four days a week—returning to catch up on their own farming needs during the day of two leftover between wage labor bouts.

The neglect to her own farm has lead to a declining cycle in home harvests: she plants late, barely weeds, and can afford little in the way of inputs. The cycle continues of not harvesting enough – and her and her daughter having to continue to work for the better off families—even for food.

In 2008/09 season, seed aid was distributed to vulnerable households in the local area: MaDawu missed out on the aid because both she and her daughter were off working elsewhere. So for 2008/09, MaDawu once again had to source for seed through *maricho*.

Gender Issues to consider when thinking about seed security

We end this section on system structures and processes with a note on women. Seed security assessment and seed security interventions are not necessarily gender neutral, and these thought should serve as a 'reminder' to guide both assessment and subsequent action.

It has been noted that women in developing countries often manage seed-system processes, especially storage and seed exchange (Sperling, 2000). In Zimbabwe, other additional important issues to be considered when thinking about women and seed security include:

a) women's land access, land tenure and property rights
b) impact of HIV/Aids
c) traditional women's crops
d) seed sources and storage for women's crops; and
e) formal research and extension.

Land and Property Rights

In communal areas of Zimbabwe, land rights are regarded as traditional rights, primarily facilitating men who were born in a certain area to provide a living for their households. Residential and arable land is allocated to married men by traditional leaders and married women have access to it only through their husbands. Problems associated with land tenure security and land administration systems have been proven to be an integral part of the challenge facing widows and other vulnerable women. Women who lose their husbands through death or divorce are often vulnerable to property rights violations inflicted to them

by either relatives or by the wider community (Izumi, 2006). With respect to arable land, the ability of women to fully utilize it usually declines with the loss of a husband. This inability is, at times, used a basis by relatives for land seizures, both temporary and permanent. (see Box 6).

On dissolution of their marriages, the women return to their natal homes. In such cases, if they require land for agriculture, this may be allocated in pieces by their relatives. Women may be expected to work in their families' fields (Izumi, 2006).

Even within a functioning household, access to land by married women to grow their own crops is subject to negotiation and can be a cause of conflict if husband is not in favor of the wife's plans. Therefore, how much land and its quality from the household field women are eventually granted depends on individual women's ability to negotiate effectively. Often, their husbands will prioritize crops men have control over. In Bikita women reported that they are often allocated less fertile portions to grow their own crops.

HIV/AIDS and Migration

One effect of HIV/AIDS and labor migration by males in rural communities of Zimbabwe has been an increase in the number of female headed households. It is estimated that 60% of the households are headed by women. In Tsholotsho, women estimated that 50% of the households in their community are headed by women. In Bikita the estimate was much higher, at 75%. These developments impact on availability of labor for agricultural production. Also, migrant family members, including spouses often return home already ill and requiring home-based care; this is usually provided by the women.

Women's crops and control over harvest

Traditionally, there are some crops that are regarded as women's crops. In Zimbabwe, these crops include sweet potatoes, groundnuts, Bambara nuts, cowpeas, finger millet, sorghum, pumpkins and pearl millet. The crops are mainly grown for preparing key dishes of food for the family. Pumpkin and cowpea leaves for instance are used as vegetables (fresh and dried). Cereal crops (finger millet and sorghum) although mainly used for *sadza* are also used to make non-alcoholic fermented drink locally known as *mahewu.* Groundnuts are consumed as roasted or boiled grain or are processed into peanut butter which is mixed with vegetables or other traditional dishes.

Although it is generally recognized that women use the crops for food for their families, women also sell excess harvests or products to earn income. The crops are generally marketed locally, to outside traders mostly from urban areas, who come to the areas specifically to buy them. The traders either pay cash for the crops or acquire them through barter trade. In Murehwa, however, women said they sometimes take their produce, especially sweet potatoes, to sell on their own in Harare. Overall, women in all sites reported facing marketing challenges for crops because there are limited local markets. They observed that of late, outside traders are finding it difficult to travel to rural areas because of increased transport costs. Women in Bikita reported that they were finding it difficult to sell sweet potatoes because there is an over-supply of the commodity in the area.

Income earned from women's crops is commonly used to buy personal assets, mainly, utensils, personal clothing and in some cases, small livestock (poultry and goats). Women in

Beitbridge said they also use the income to meet the needs of the girl child, especially sanitary ware. In Murehwa and Bikita women reported that assets procured by women using their own income form part of the estate-"*nhaka*"- of the women to be shared by her relatives and given to her children after her death. If the husband survives the wife and re-marries, the new wife is not allowed to use the utensils bought by the late wife: she has to procure her own.

BOX 6: ARE THESE REALLY WOMEN'S CROPS?

It is well known in Zimbabwe that women have special crops. "Women's crops" include the small grains (finger millet, sorghum and pearl millet), sweet potatoes, as well as all the pulses (groundnut, sugar beans, cowpea and Bambara nuts). Although used mostly for food, women can sell small quantities of their crops to purchase items such as household utensils, clothing and even small livestock. In theory, women also have decision-making power over their crops--- can offer gifts to relatives, neighbors and visitors—even without asking their husband's permission.

But is this truism really true? Do 'women's crops' really exist?. Evidence suggests that the gender divide is not so divided.

On the one hand, there is a tendency for women's crops—to become male—once they gain lucrative marketing value. Hence, In Murehwa, sweet potatoes, a woman's crop, became male-dominated as soon as it gained higher market value and as big volumes began moving to Harare stalls and stores .

On the other hand, 60% of communal households, the majority, are indeed female headed,--- due mainly to outmigration, or mortality associated with HIV/AIDS.. This means , *de facto*, that all crops might be 'women's crops for many households in Zimbabwe.

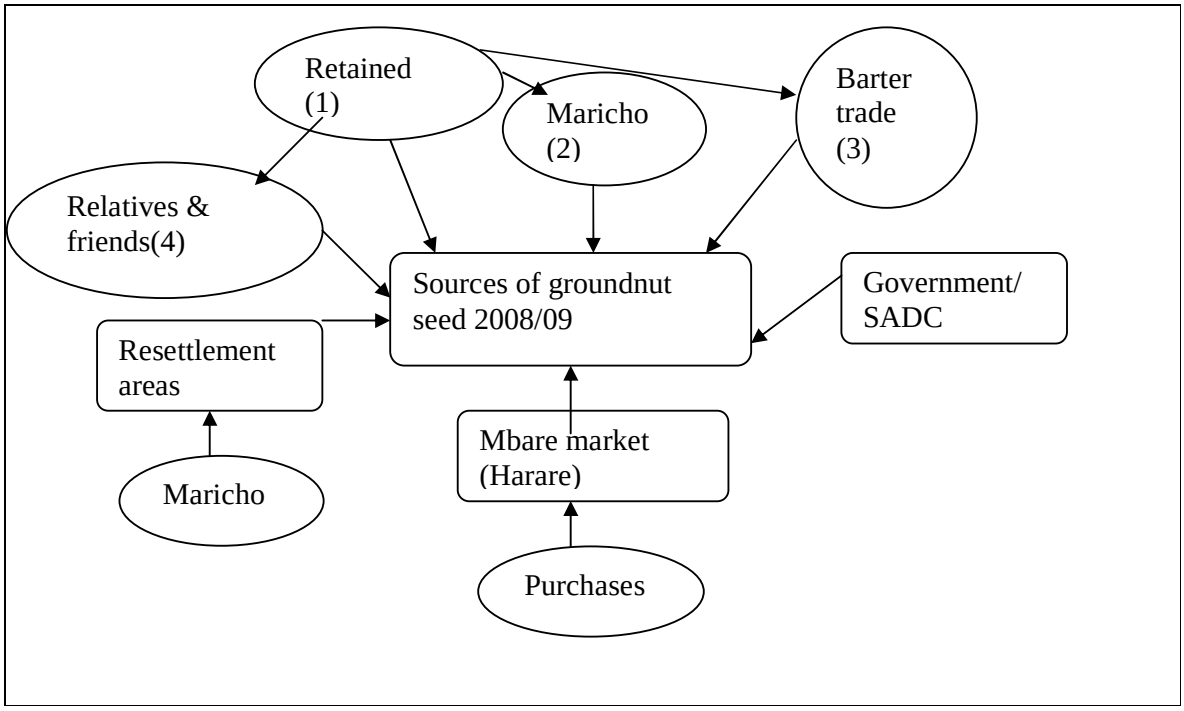
So women seem to have true control over crops—mostly when they have subsistence value—or when there is no man around.

In Tsholotsho, women said that to assert or protect their control of their crops, some couples keep separate granaries because the wives fear that their husbands might use harvests from their hard work to support "small houses"— aka mistresses. Wives in polygamous unions keep separate granaries.

Sources of seed for women's crops

Seed for women's crops is not easily available in the formal market. Hence, most of the seed for women's crops is obtained locally through informal seed systems i.e. from own saved seed, barter, gifts and labor (*maricho*) or goods exchanges. The following diagram presents findings from a focus group discussion held with women in Murehwa on their sources of groundnut seed in 2008/09 season. Except for very modest government distribution (SADC), all came from local channels.

Figure 6: Women's Focus Group Discussion Ward 14, Murehwa.



note: numbers identify order of importance of seed source channels, with 1, retained, being most important.

Generally, women in all sites were found to be seed secure for most crops. The only exceptions were noted in Beitbridge and Murehwa where groundnut seed and rice were reported to be difficult to obtain locally, respectively. In Beitbridge, the explanation for this was that low rainfall makes it difficult for the crop to develop sufficiently for it to be used for seed. As a result, women in Beitbridge reported exchanging as much as 1 goat for a 50kg bag of unshelled groundnuts.

Variety security on the other hand was reported to be a challenge for crops such as sweet potatoes (Murehwa and Tsholotsho), groundnuts (Beitbridge & Bikita). Given the prevalence of recycling of local seed, it seems that there is limited introduction of new varieties

Outside the community, the informal markets are the main source for seed. However, seed sold in these markets is usually sold as grain, mainly for food, and therefore may not always be sorted by variety. Women have to look carefully when they want to buy preferred varieties or which are adaptable for their regions.

Seed Storage

Potential seed from women's fields is selected and stored after harvest. Groundnuts and Bambara, are stored unshelled and only shelled and seed selected when ready to plant.

Storage of crops was reported to be a challenge. In Bikita and Murehwa the main challenge cited was the prevalence of theft. Because of this, farmers refrain from storing their crops in granaries. Instead, they store it in the house, at times in their bedrooms. Women in Murehwa

said they usually store the potential seed outside their own homes in fear that children might consume it or that they, themselves, might succumb to the temptation of utilizing the potential seed for household food or sale. They entrust someone usually their in-laws to keep the grain for them until planting time. In Beitbridge, they said they mix groundnut seed with burnt goat dung to preserve it and to reduce the likelihood of it being consumed. In Tsholotsho, the women said they mix seed with poisonous substances such as paraffin. However, other household members, including children are made aware of this so that they do not consume it.

Formal Research and Extension

Introduction of new varieties for women's crops (groundnuts, cowpeas, sorghum and pearl millet) in the communities has been mainly through NGO initiated interventions, particularly Farmer Field Schools (Tsholotsho and Murehwa) and Conservation Farming. However, membership of FFS is low in some areas and as a result, the spread of new technologies is, at times, slow. For instance, in Murehwa CTDT has 130020 registered beneficiaries for all their interventions but only 432 are members of FFS. Moreover, the selection of beneficiaries often targets specific vulnerable groups e.g. female headed households, chronically ill and physically handicapped. Participants of women focus group discussion observed that some of the targeted beneficiaries are not always able to utilize the seed either because they are too ill or have inadequate resources

All this suggests that there is need for more rigorous interventions geared towards improving women's access to seed for their crops. In seed security assessment, and subsequent interventions, issues of land use, harvest ownership, right to sell produce might all be usefully considered.

Given that seed of 'women's crops' is mostly procured from local channels, female-linked production has generally been stable over these turbulent years—as informal systems have generally fared well. Some new varieties have entered informal channels (as show through processes of PVS, seed fairs, etc. above). However, much more can and should be done to bolster variety dynamism and female-linked seed production gains. Just as the informal seed sector generally could thrive with more support, so too, can women's linked seed and food production enterprises, more specifically.

Concluding comments

This section has review the history and recent status of the structures and processes which bring seed, and other inputs to individual farmers and communities. Formal sector seed production, has been particularly compromised over the last few years, due to lack of inputs, price controls, and devalued currency. However, production and distribution networks are starting to re-open, and need to be supported, rather than undermined. The overwhelming focus of the formal sector has been on commercial crops, particularly maize. However, many other crops contribution to production stability and nutrition. Minimally, efforts should be given to adequate producing adequate foundation seed for these key, but 'orphan crops'.

The informal sector seems to have remained stable these years, and probably has even grown in importance, as crops such as maize, normally sold in formal outlets such as agro-dealers, increasingly moved towards informal channels of barter trade or black market sale. A number of process have existed to introduce new varieties into such local channels, but

these need to be revitalized and regularized, that is, used on a consistent and predictable basis. The potential for increasing the scale of production of high quality seed within informal channels looks promising.

Over the last few years, farmers have developed a range additional strategies getting access to seed. While some of these coping strategies are linked to the currency dilemma, many have evolved simply due to poverty, and '*maricho'* was highlighted as particularly notable during the fieldwork period.

And a final note on women. Their prime links to the informal channels mean that the security for so-called women's crops has been relatively stable. But the label of 'women's crops, puts Zimbabwe females in a small and mistakenly-labeled box. Sixty percent of communal households are female headed, and, in addition, a number of the so-called women's crops are being increasingly commercialized. So, in essence, all crops in informal and formal channels are potentially linked women. This means that their special concerns -- and well as a farmer's routine concerns- might best be reviewed in seed security assessments—and subsequent interventions. This assessment made only very modest moves towards more gender-sensitive SSSAs.

We now move to the more specific analysis of seed security findings 'on the ground', as documented during July 2009.

VI: FIELD FINDINGS: ACROSS SITES

This section reviews the field findings emerging across the four assessment sites. General trends in formal and informal seed sector functioning are first outlined and results from community-level analyses are then presented. We focus on some of the overall trends which might guide future action.

While fieldwork only took place in four sites, the choice of locales offers good coverage of typical Zimbabwe smallholder agricultural regions, and gives insight particularly into the variable areas in which humanitarian aid might be given. These range from the better off natural region IIB (Murehwa) to the very poor extreme of natural region V (Beitbridge).

Site by site findings, and recommendations tailored to specific zones of action are presented in Section VII.

FORMAL SEED SECTOR FUNCTIONNING

Agro-dealers

Agro-dealers were opening up in every city, town and growth center visited during the assessment (Annex). This is a novel and very positive development as many had closed doors in the last five years as price controls, pre-determined outlets (GMB), and currency devaluation had rendered business unprofitable. New outlets even opened during the course of the field assessment, indicating that the next few months could be a dynamic period of transition: e.g. a SeedCo outlet opened its doors in Murewha on July 10, 2009. Anticipating expanded business, not only were agro-dealers selling seed and fertilizer, but so were general delivery stores, and many non-specialty shops, such as grocers and clothes stores , which would put 5-10 bags of inputs on offer. Note that prior to the current stress, Zimbabwe had unusually extensive formal sector networks, with more than 15 companies involved in the production and marketing of seed (T. Takavarasha et al., 2005)

The amount of stocks available for sale was impressive for the time of year, many months before sowing and well before farmers' main period seed purchases in September and October . Established agro-dealers had generally upwards of 15T maize for immediate sale, with the majority indicating that these were just initial stocks, which could be replenished when, or if, depleted. Table 24 gives an idea of the scale of stocks on offer in mid-July 2009 from the select few agro-dealers willing to share inventory information in the specific zones visited.

Table 24: Select Agro-dealer inventories, Mid-July 2009

DEALER	Seed and/ or Fertilizer
Pioneer (seed house)	4000 T maize
Agri Seeds (seed house)	5000-6000 T maize
Murehwa	
SeedCo (town outlet)	30T maize
Bulawayo	
Bulewayo Seed Center	90T maize 90T fertilizer
Farm and City	200 x 20,000 kernels (10kg) maize
	40 x 50,000 kernels (25 kg) maize
	1000 x 10 kg maize (another variety)
Bikita	
Masvingo Farm Supplies	30T maize
Red Star	150T (mid August)
N. Richards	30T maize
Beitbridge	
N+R	(7T maize programmed)
Bambazonke	(60T maize programmed)

Dealers generally assessed as quite positive farmer buying patterns. In Masvingo, for example, Masvingo Farm Supplies (MFS) had sold 8T maize immediately upon opening in March 2009 (from stocks carried over from 2008), while N. Richards, had sold 15T in one week mid-July and had ordered another 15T to arrive the following week. Dealers expect farmers to have even more cash to buy purchases after the sale of the May-June harvests, which are ongoing. Anticipating farmers' limited access to US currency, dealers are making available smaller packets on inputs: two, and particularly five and 10kg packs of maize and fertilizer, along with the normal 20 and 25 kg packs.

Agro-dealers have expressed optimism but concerns over staying open during this critical period, and the case of MSF is an illustrative one (Box 7). Economic controls are relaxing, and farmers are showing they have some buying power. However, many dealers have also expressed dismay over the upcoming free direct seed distributions (DSD) which aim to deliver US$ 140 million worth of maize seed and fertilizer. Even if free seed is provided only in November 2009, hearing about the prospect of such aid can change farmers' buying patterns immediately--even five months earlier, in July 2009. Evidence for such anticipatory behavior came from the Murehwa site, where in 2008-09, 50% of farmers in the district planted maize late, as they delayed sowing until the free fertilizer came, in mid December (DAEO, Murehwa, personal communication).

In terms of bolstering agro-dealers, two immediate challenges are apparent;

- To get inputs for sale into the regions, to agro-dealers (versus only to centralized relief agencies procurers)

- To encourage farmers to buy inputs now , knowing that free seed and fertilizer will be distributed in massive quantities later in the year.

BOX 7. HOW DIRECT SEED AID IS KILLING THE AGRO-DEALER BUSINESS

Masvingo Farm Supplies (MFS) is the largest agro-dealer in the province (Masvingo). Their booming seed business, driven by maize, has meant that sales during the 'seed purchase season' have provided them income to last all year-- that is, until free seed relief slashed their business and undermined their very existence.

MFS has operated as a specialized agricultural input wholesaler. To survive, they have diversified into retail sale and even expanded their goods on offer to include groceries. AT their peak, MFS had 14 branches and moved over 210T of maize seed a season, serving over 100,000 commercial and communal farmers with agricultural inputs.

Last August (2008), MFS closed its doors and let all 150 employees go. (150 employees, their families, their extended families—upwards of 600 people lost critical income.) Free seed distribution translated to no MFS business. They re-opened March 2009, with 15 staff only, and had hopes for renewal. Sales to-date have been promising and the 8T of last year's maize stocks sold out in the first few weeks. Many farmers could afford the 10 kg packs—even before cashing in on the expected harvest sales in June and July. MFS has already procured another 30T of maize seed, from Pioneer and Pannar, and is still hoping SeedCo might avail them some supplies. This looked like the first real business they would have in years.

But---now MFS learns that the seed relief business is again in full swing. Is there no other way, they ask? What about subsidies to farmers through agro-dealers? or expanding use of vouchers to formal seed stores? This year could be their make- or- break one.

Agro-dealers voiced their multiple constraints, many of which are distinct to this transition period. At the regional level issues include: e.g. how to muster up the initial currency to purchase initial bulk supplies; how to adjust prices between the US$ and SA Rand; how to get supplies to come to the regions, when they are being purchased centrally in Harare.

At a higher level, Managing Directors of seed companies also raised challenges quite unique to the current Zimbabwe situation: how to get the currency to pay their outgrowers (who *have* produced seed); how to re-build a network of trust among decentralized agro-dealers ; and how to rebuild their farmer clientele base. Some such as Agri Seeds are poised to expand quickly: for the year 2007/08 they produced 1200 mt of maize seed but this year, 2008/09 have reached 5000-6000 mt. Clearly, given the importance of the formal seed and fertilizer sector in Zimbabwe, such a sector needs to be supported, not undermined during this initial stages of re-opening. *A full analysis of the formal sector current constraints, all along the value chain should be a first priority for those interested in small farmer production and livelihood viability.* Managing Directors of the Zimbabwe Seed Trade Association (ZSTA) , SeedCo and Agri Seeds also expressed a strong interest in helping to lead such an analysis, as soon as possible**.**

In brief, the agro-dealers network is starting to re-open, important quantities of inputs are already on the shelves, and initial evidence suggests farmers have some purchasing power. Any aid focus should minimally aim to support and strengthen these processes—that is, to keep these agro-dealers functioning and to enhance farmers' ability to pay for input goods.

Innovative traders agents

Innovative efforts in extending the reach of agro-dealers were also noted during the assessment. Starting from 1995, CARE International in Zimbabwe initiated its 'Agribusiness Entrepreneur Network '--- AGENT program. It set up a network of community-based agents to sell agri-inputs and allied products to smallholder farmers. The program trained over 800 agents and at its height covered five provinces and 33 districts. Basically, it brought a network of retail shops much closer to its rural buyers. Currently the program is active in Masvingo and the Midlands (the three districts of Chivi, Mberebgwa and Mwenezi) and has 106 active trader agents. CARE not only provides services to farmers through supporting such trader agents, but equally enhances agents' own business skills, loan prospects and entrepreneurial opportunities.

From 2002-2007, CARE also engaged in a special Voucher Input Scheme, aimed to improve immediate agricultural recovery coping mechanisms. This more emergency response also worked through their AGENT program (Box 8). It made sense to work through local traders even during emergency response as: a) The AGENT program had the infrastructure to roll out a program quickly ; b) such AGENTs were strategically located in rural wards—hence they were accessible and had an established relationship with program clients; and c) by working through AGENT, CARE made sure this rural network was not cut out of the agri-input supply chain—even during emergency. This market intervention was designed to support local market actors. In contrast, states CARE : "Direct distribution programmes generally sideline the local actors and jeopardize their businesses' (Musinamwana, 2009).

BOX 8: CARE- AGENT PROGRAM

Mutual trust relationships among urban wholesalers, rural traders and agro-dealers restarting

Through the AGENT voucher agro-input distribution program, 2002-2007, CARE International in Zimbabwe facilitated procurement of seed and fertilizers by rural traders and agro-dealers through major wholesale trading partners based in Masvingo town. This relationship, based on a guarantee of procured agro-inputs by CARE in the initial years – later developed naturally into a trust relationship where the same agro-inputs could be procured without a guarantee from CARE.

The range of goods were later expanded from seeds and fertilizers to include major household items obtained from wholesalers – soap, cooking oil, washing powders and farm implements. According to wholesalers and rural traders involved, business expanded significantly, ushering in a new partnership of confidence and mutual trust – until it was abruptly terminated though widespread trade interference caused by price control enforcement and hyper-inflation, in mid 2007 to late 2008. Businesses were forced to trade at a loss, and most opted to close down rather than trade at the set uneconomic prices.

Now, July 2009, all the work done towards building confidence and trust has to start afresh, albeit with new traders and the few who can afford to reopen. Looking forward, prospects to re-establish these trade links are bright as price controls have been removed and free trading is in place. Financial conditions and business continue to improve as some rural traders have already secured loans of up to US $1,000 to be repaid back to financial institutions at an interest rate of 10% over the set 3 months. Interventions such as the AGENT program based on mutual trust relationships merit further expansion.

The CARE AGENT model certainly bears revitalization. In terms of an emergency response, the Swiss Development Corporation (SDC) , working with CARE, is taking a lead for the 2009-10 season in providing farmers with vouchers linked to agro-dealers. Basically, even during an emergency response, the project is trying to stimulate private-public sector partners and revive local economies. SDC also writes: "Technical support plays a very important role in achieving desired impact in *emergency* agriculture [emphasis added]. The programmed will ensure the short and medium term availability of AGRITEX extension services to both vulnerable and other smallholder households" (de Santis, 2009).

In general, given that agro-dealers are a key resource for small farmers (including poor farmers), efforts are needed also to help them become even more small farmer-oriented, during emergency as well as more normal times. This would include:

Moves to greater small farmer client orientation :

- packing seed and fertilizers in 'affordable sizes';
- early stocking up of seed and other inputs
- putting on offer farmers' priority varieties in any region, as well as a diversity of varieties (allowing choice and specific need targeting)

INFORMAL SEED SECTOR FUNCTIONNING

Overall assessment

The informal sector provides farmers with seed of basically all the crops they grow, except for maize, wheat and horticultural vegetables. Thus it provides over 95% of the seed for crops such cowpeas, Bambara nuts, sorghum, finger millet, pearl millet, sweet potatoes, and soybeans (see section V, on Informal Sector) . Such crops are key for production stability, for nutrition, and to address equity concerns, —as many are identified as women's crops.

Several assessment thrusts suggest that informal sector supplies are abundant in 2009 and that the channels that produce, disseminate and sell informal sector seed are operating well.

- Home harvest was exceptionally good. The 2008-09 harvest was a good one, as assessed by all four farming communities, and supported by the Ministry of Agriculture Crop and Livestock Assessment Mission. Following on a 'bad' year, maize production 2008-09 was 160% more than that of 2007-08; and the 2008-09 combined small grains was 190% more than the previous year (and 110% more that the recent five-year national production average) (Ministry of Agriculture, Mechanisation and Irrigation Development, 2009).

- Social networks of exchange remain strong. Gift-giving and community exchange has long been documented in Zimbabwe (Friis-Hansen and Rohrbach, 1993). Such social networks continued to function during the 2008-09 season, providing 10 to 38% of the seed sown of maize, groundnut, finger millet, cowpea, sorghum, pearl millet and Bambara nut. (see Table 33 below). It is impressive that such extensive gift-giving took place, just after the 'bad season of 2007-08.

- Local markets have good quantity of supplies, as assessed by traders themselves. Open markets in all sites visited had good supplies of a large variety of crops. Part of the abundance was attributed to a good harvest and part due to improved access to fuel and transport facilities which helped agricultural produce move. Overall, The quality on offer generally looked good to excellent: the legumes in particular were full grained, generally sorted to a single variety (except cowpea), free from inert material and with little evidence of damage in storage. Both traders and farmers clearly recognize differences between grain and potential seed (Box 9), with the sellers putting substantial 'potential seed' on offer. The varieties and seeds stocks which have potential as seed usually double in price during sowing periods: for example, a cup of sugar beans may cost US$ 0.25 in July, and US$ 0.50 in September.

BOX 9: MANAGING ' POTENTIAL' SEED

Open markets serve as an important source for farmers' seed. While these are commonly referred to as 'grain' markets, farmers and traders exercise considerable agency in managing and selecting among grain supplies to ensure that some can be used as 'potential seed'.

Traders don't sell just anything	**Farmers don't plant just anything**
Traders aim to sell a high quality product and clearly recognize that some of their stocks will be used as seed: prices do double around planting time for 'potential seed' . As one woman trader in Bulawayo explained: • varieties are kept separate • seed is graded by quality • protective chemicals are used in storage to minimize damage	In scouting out potential seed from markets, farmers seek out varieties, they know. They further screen for visible quality traits: are the grains mature?; are they not damaged by pests?. Farmers may also buy potential seed within a larger grain batch and make the refinements for 'seed' at home, sorting out the non-seed trash (the twigs, pebbles, sand, broken grains.) As important as the product is the provider. Farmers try to buy planting material from people they trust—sellers who will tell them the origin, so as to know if the material is adapted--- and sellers who will be held responsible—if the planting material proves sub-standard.

Local level seed production initiatives

The big surprise in the informal sector was an abundance, not a lack. This abundance was most apparent where local level seed production has been given special technical and organizational support, particularly in the Tsholotsho region. In Tsholotsho, farmer field schools (FFS) and community-based seed multiplication groups have long been supported by AGRITEX, ICRISAT, The Community Technology Development Trust (CTDT) and others. Seed production in the FFS started in 2003 and been substantial each year since, ranging from 39 mt during the drought year of 2007-08, to the current 2008/09 stock of 155 mt for crops of pearl millet, groundnut, sorghum and cowpeas seed (Table 24— 2009/09, and section VIII for production across years)

Table 24: Tsholotsho Farmer Field School Seed production 2008/09, for 46 FFS

Crop	Variety	Seed produced by FFS (mt)	Seed produced by FFS members	Total (t)
Pearl millet	Okashana	14	70	84
Groundnut	Nyanda	7	21	28
Sorghum	Macia	18	17	35
Cowpeas	IT 18	4	4	8

Source: AGRITEX- Tsholotsho district office

Similar support by The Community Technology Development Trust (CTDT) has resulted in comparable local based seed production, but which have gone a step further (Table 25). CTDT-facilitated groups working areas of Tsholotsho, Murehwa and Uzumba Maramba Pfungwe (UMP) produced over 311 mt of high quality pearl millet, sorghum and cowpea during the years 2005/06 to 2007/08. This seed production has directly linked local organized groups to the formal sector, delivering supplies to the Seed Company of Zimbabwe (SeedCo) and Agri Seeds & Services. CTDT adds: 'smallholder farmers in these districts retained over a quarter of what they delivered for their own seed and food security in the same period' (CTDT, 2009).

Table 25: On-farm seed production and sales by smallholder farmers in Tsholotsho and UMP Districts

Year	Pearl millet (mt)	Sorghum (mt)	Cowpeas (mt)
2006	150	30	10
2007	20	33	10
2008	16	11	31
Total	**186**	**74**	**51**

(source: CTDT, 2009)

The point is that farmers in some of the more stressed drought-prone regions of Ziimbabwe, such as Tsholotsho don't want to *receive* seed from outside humanitarian or development agencies as a priority, rather they want to *sell* their own seed. The team promised one such group that they would make known that they had surpluses to market this year (Box 10).

Sale of seed produced is indeed a problem. One farmer group (producing over 100 mt 2008/09), recounted that only ¼ of their stocks generally sell locally, much of this being groundnut. For the rest, ¾ of their production, the group has generally relied on outside markets to move their sorghum and pearl millet seed (both of improved varieties). In the past, their clients have included GMB, Agri Seed, NGOs such as ORAP and CADEK, and National Foods. They have also sold large quantities in emergency-related operations such as Seed Fairs. However, the seed markets have been irregular, and most recently, with currency challenges, seem to be drying up.

There is a strong need to tie any further local level seed production initiatives with a clear marketing strategy: that is an identification of actual demand and precise marketing outlets. This should be done before seed is multiplied. Farmer groups might also benefit from training in agro-enterprise and business development more generally. In brief, these farmer groups have mastered the techniques for producing good quality seed. They now need help

to professionalize their operations as a sustainable business enterprise. Experience elsewhere suggests that these local seed production enterprise can be sustainable only if ; a) high quality seed is hard to produce on farm- and hence a demand exists (such as with groundnut); or b) if seed production groups constantly multiply the initial stocks of new and demanded varieties. So they move initial stocks before there has been community saturation. For community seed groups to multiply novelties, they need to be systematically linked the sources of such innovation, such as government research centers.

BOX 10: CAN FARMER SEED PRODUCTION EXPERTS CONTRIBUTE MORE TO REGIONAL SEED SECURITY?

Can small holder farmers contribute to seed security in their communities? Yes they can, if well trained. In the 2003/04 season there were only six farmer Field Schools (FFS) producing seed in Tsholotsho. Today the number has grown significantly to forty six. In the 2008/09 season the FFSs produced 84 tones of pearl millet, 35 tones of sorghum, 28 tones of groundnut and 8 tones of cowpea seed.

This is enough to plant 16000 ha of pearl millet, 3500 ha of sorghum, 350 ha of groundnuts and 133 ha of cowpeas.

If more FFSs are formed and the farmers trained in seed multiplication and entrepreneurial skills, there is no doubt that these seed production experts could make a great impact on seed security in their districts and beyond.

An announcement

The 26 women in the FFS in Vukani want YOU to buy THEIR high quality seed this emergency aid season. they have immediately available:

- ***78T of Okashana (pearl millet)***
- ***50T Macia (sorghum)***
- ***20T Nyanda (groundnut)***

Stability of local systems—harvest to sowing ratios.

Such surpluses in the local system are unusual, and give testament to substantial efforts of developmental support agencies, especially in Tsholotsho. However, seed security stability might be expected across most crops, knowing the amount of the harvest needed for seed, or the harvest-to-sowing sowing ratios. In theory, the percent of a normal harvest required to meet the sowing needs in the next season is the inverse of the multiplication rate. Small seeded crops generally have high multiplication rates and thus only a very small proportion of the harvest is needed as seed. For the dominant small grain crops of dryland Africa -- millet and sorghum – typically less than 1% of the harvest is needed for seed. Thus, for these crops, even in a bad year, the seed requirement is unlikely to be a significant drain on the harvest, unless there is almost total harvest failure. Large seeded crops (for example, groundnut) on the other hand may require upwards of 10% of the harvest to be set aside as seed. For these crops therefore, seed availability is more likely to be an issue, especially in bad years.

In practice, such were the trends found in all four sites in Zimbabwe (see also section VIII) . For the millets and sorghums, there were virtually no problems with seed availability. One might give such crops in aid interventions only if the aim is to introduce new varieties, which is more properly a developmental rather than emergency intervention. In contrast, farmers in all sites did highlight concerns about groundnut seed availability and quality, which might be due to a series of factors (Box 11). In terms of groundnut seed availability, it was also revealing to find the extent to which poorer farmers seem relatively more disadvantaged. In Bikita, poorer farmers need up to 25% of their groundnut harvest to meet their seeds as they may lack lime or gypsum , or have less capacity to weed. Community assessment for the average farmer were half that, about 12-13% of the harvest. (Table 26)

Table 26 a&b : Harvest to Sowing Ratios

a. Tsholotsho example

PEARL MILLET	**Average farmer**	**Poor Farmer**
Area sown (ha)	1.5	0.4
Seed needed (kg)	8	2
Harvest (kg)	640	160
% of harvest need to meet seed needs	**1.3**	**1.3**

b. Bikita example

GROUNDNUT	**Average farmer**	**Poor Farmer**
Area sown (ha)	.9	.1
Seed needed (kg)	90	10
Harvest (kg)	720 (might use lime or gypsum)	40 (less capacity to weed)
% of harvest need to meet seed needs	**12.5%**	**25%**

BOX 11 : GROUNDNUT SEED: WHY IS MULTIPLICATION SO DIFFICULT

Groundnut is an interesting crop in terms of seed production because not all grain can be used as seed for planting, why?

- During growth, if the soils are deficient in boron, the embryo will not develop well resulting in dead heart. Whilst the grain may be plump, the embryo will be dead and planting such grain will be a waste of nutritional food and also would result in poor plant stand. Therefore any seed crop should be grown in soils with adequate-boron or the crop should be fertilized with basal compound which contains boron (e.g. Compound L in Zimbabwe) at planting.
- Most of the short season varieties grown by the smallholder farmers are not dormant at maturity so that when harvesting is delayed or when not properly dried, they sprout, thus affecting seed quality. Therefore effort should be made to harvest on time, quickly air dry the crop as well as remove all sprouted seed during seed cleaning.
- Groundnut seed is rich in proteins and fats (ideal foods for micro-organism) and if not handled well after harvesting will quickly loose viability. The recommendation is to air dry the seed crops (not exposing the pods to the sun). Generally, groundnut seed will remain viable for longer if stored in pods in a cool dry place and shelled just before sowing, but one needs to protect against storage pests such as rats.
- The groundnut seed is fragile with the embryo located at the very tip of the seed and the seed covered with a thin papery testa, hence very prone to damage during transportation.

It is essential to dress groundnut seed with a fungicide at planting to take care of seedling diseases.

(from Patience Nyakanda, APLUS and formerly groundnut breeder at the Crop Breeding Institute)

In sum, the informal seed system functioned well in 2008/09. The technical production of groundnut presents some challenges, but for other crops, farmers have been able to produce and access adequate seed supplies.

In addition, there is important potential for community-based groups to become more involved in seed-related business. Numerous FFS already have demonstrated their capacity to produced seed on an impressive scale. However their operations need to be better tied to markets and, more generally, need to evolve toward more professional agro-business models. Local seed businesses also can only be sustainable if they are tied to a constant source of new varieties. To be sustainable, the informal system will also require ongoing links to formal sector variety innovations: such links might best be explicitly programmed.

There is great potential for the informal system to contribute even more to rural seed security ---and income in Zimbabwe. Developmental efforts might usefully give real priority to such system strengthening.

COMMUNITY LEVEL RESULTS- ACROSS SITES

Community (Ward) level assessments were done in all four sites and included community meetings, special focus groups with women, key informant interviews (with local leaders, shopkeepers, NGOs staff), and formal individual farmer interviews. The varied methods allowed for considerable cross-verification.

Crop diversification and value added products

There is a impressive amount of processing of crops within communities, to add value to basic agricultural products and especially to generate income (Table 27). All major crops could potentially undergo transformation into saleable products. This transformation is in addition to the sale of raw products directly, such as sweet potato. Sweet potato came to prominence as an important and direct source of income in both Murehwa and Bikita, when decreasing wheat production (due to input scarcity) forced communities to find wheat bread substitutes.

Table 26: Crop value –added products; Examples across sites

CROP	Value-Added Product
Sorghum/millet/maize	Beer
Groundnuts	Peanut Butter
Groundnuts/Sunflower	Cooking oils
Sunflower	Extraction of oil and **cake** is used for livestock feed
Soybean	Bread
Soybean	Milk
Leaves; beans/cowpeas	Relishes

Farming communities also reported fairly rapid processes of crop diversification, partially in response to the high cost of maize seed, and partially to stabilize production and open income opportunities. For example, in Murehwa, sweet potatoes and sunflower were new crop entries; in Bikita, cowpeas entered as a new crop and sorghum use was intensified. Despite constraints in the economy, and problems accessing inputs, the Zimbabwe farming systems have been unusually dynamic.

Most important crops

In listing their three most important crops, farmers mentioned maize across the board in all four sites, although with only about half the farmers in Tsholotsho and Beitbridge giving it a priority status. So unlike 'common wisdom', not 100% of Zimbabwean farmers center their agriculture around maize. Groundnut also appeared as of high interest across sites. A cereal, either sorghum, pearl millet or finger millet, was also usually cited as a central entry.

Table 28: Farmers' three most important crops grown across sample wards, in diverse agro-ecological zones.

Crop	Murehwa		Tsholotsho		Beitbridge		Bikita		All sites	
	Freq	**% farmers**	Freq	**% farmers**	Freq	**% farmers**	Freq	**% farmers**	Freq	**% farmers**
Maize	43	**100**	22	**52.4**	22	**55**	40	**100**	125	**75.3**
Sweet potatoes	19	**44.2**	-	**-**	-	**-**	2	**5**	21	**12.7**
Cowpea	6	**13.9**	14	**33.3**	12	**30**	8	**20**	40	**24.1**
Groundnut	24	**55.8**	24	**57.1**	29	**72.5**	21	**52.5**	98	**59.0**
Finger millet	22	**51.2**	-	**-**	-	**-**	19	**47.5**	39	**23.5**
Bambara nut	4	**9.3**	5	**11.9**	2	**5**	11	**27.5**	22	**13.3**
Pearl millet	2	**4.7**	30	**71.4**	23	**57.5**	-	**-**	55	**33.1**
Sorghum	-	**-**	32	**76.2**	27	**67.5**	11	**27.5**	69	**41.6**
total sample	43		42		40		40		165	

Results of 2008/09 Cropping Season

Performance of varieties

Going crop by crop, farmers across sites assessed the 2008-09 season as an average or good one. Also, the overwhelming majority indicated that they will re-sow the varieties they had on offer , which is a clear sign of crop and variety appreciation .

The major varietal dissatisfaction noted concerned cowpea in Tsholotsho, which scientists from NARS say was wrongly labeled at IT18. It seems the variety was something different from what was advertized.

Table 29: Farmers' assessment of performance of varieties planted in 2008/09 cropping season , across sites

	Performance of variety planted (%)			
Crop	Poor	Average	Good	% of farmers who would re sow the variety
Maize	39	67	89	75.3
Sweet Potato	19.44	19.44	61.11	83.3
Cowpea	34.15	21.95	43.9	76.9
Groundnut	14.53	43.59	41.88	96.6
Finger millet	20.93	34.88	44.19	88.1
Bambara	14.29	47.62	38.1	95.2
pearl millet	12.5	43.75	43.75	84.4
Sorghum	19.05	27.38	53.57	87.8

Types of varieties used

Analysis of types of varieties planted also shows interesting dynamism in Zimbabwe small farmer agriculture. As expected, the majority, three-quarters, grow a hybrid maize variety,

although some of this seed was retained seed. Of unusual interest is the use of modern varieties for cowpea, pearl millet and sorghum (58, 48 and 59% respectively). The percentages are high, given that there is virtually no formal seed sector attention to these crops. Most of the varieties were made accessible to farmers via special NGO or CGIAR projects (such as the SADC regional Sorghum Millet Improvement Project -SMIP), and sometimes being supported by AGRITEX .

The OPVs were dominant only in Tsholotsho, where 67% of farmers grew them, partly due to rigorous NGO and extension campaigns (see site specific report, Section VII).

Table 30: Types of varieties planted across all sites

Crop	Local	Modern	OPV	Hybrid
Maize	14.56	0.0	13.3	72.2
Sweet potatoes	94.7	5.2		
Cowpea	42.3	57.7		
Groundnut	78.8	21.0		
Finger millet	100.0	0.0		
Pearl millet	52.0	48.0		
Sorghum	41.2	58.8		
Bambara nut	94.4	5.6		

Overwhelming farmers found the seed they sowed in 2009/09 in good condition. Also, given a choice, farmers indicated they had planted the varieties they actually wanted to sow. The exception was for maize: while half of farmers were content with seed in their possession, the other half did desire a renewal of the hybrids. Farmers plant seed with which they are most familiar, and the issue of hybrids versus OPVs remains a debated one, across providers and users **(**see Boxes 3 and 4).

Table 31: Adaptations in seed source, varieties and quantities planted, across all sites

Crop	Frequency	% of farmers who planted the varieties they wanted to grow	% of farmers who evaluated the seed condition as good
Maize	116	53.9	92.4
Sweet potato	20	76.3	86.1
Cowpeas	38	71.1	81.6
Groundnut	93	78.3	91.7
finger millet	31	90.0	100.0
Bambara nut	18	69.4	93.8
Pearl millet	55	81.8	92.7
Sorghum	31	76.8	95.6

Sources of seed

Detailed analysis was done on farmers' sources of seed, crop by crop, for the 2008/09 season. Fourteen possible options were explored to get specific insights for the strategies

being used to access seed. In the end, all but the option of 'contract growers' was identified as a actual seed source strategy used within the sample.

Two bodies of information were put side by side to assess seed source use on the ground . First, what percent of farmers used a given source: this presents the scope of seed source options for the majority of farmers (Table 32) . Second, what percent of seed came from a given source: this serves as the bottom line for determining which sources were able to deliver significant amounts of seed--- and which not (Table 33).

Findings show that the options of 'own stock' and 'social networks' were a key source for seed for all crops, both in terms of the percent of farmers using the source and quantities of seed actually accessed. The degree of gift- giving across crops was remarkable across all crops, according to both parameters.

Use of markets was particularly important for maize, obtained primarily from agro-dealers and local shops, although various types of barter (goods and labor) also provided about 10% of the seed sown. Markets were also key for two of the legumes, groundnut and Bambara nut. In the case of legumes, it is exclusively the local shops and open markets which provided the seed, rather than the formal seed suppliers. What is remarkable and important in the case of both maize and legumes is that about 1/3 of the seed was purchased by some means, even during the 2008/09 period of extreme economic hardship.

Sorghum , pearl millet and finger millet seed were obtained mostly from farmers' own stocks and social networks, as would be expected.

Development interventions were a significant seed source only for maize and much of this through the government program of Operation Maguta. The lack of development efforts promoting other crops is perhaps lamentable.

Interestingly, although the 2008/09 season was a stress period, aid (both seed aid and food aid) were an important seed source only for the crops being introduced or promoted in an ward, for instance, the case of cowpea in Murehwa and sorghum in Bikita . Although the team had been briefed in Harare that maize food aid had been sown on an important scale, such aid sources provided only about a 1/10 of the maize seed in our sample (and some of this was probably also Operation Maguta)

In sum, farmers used a diversity of channels and multiple strategies to access their seed for the 2008/09 season. Home saved seed, gift giving and use of varied markets were the most important sources across crops. Even during this economically volatile period, farmers found ways to barter and buy at significant levels . Development and emergency aid together provided only a quarter of the total maize seed sown, suggesting that even during this high stress period, farmers used mostly their own channels, and their own initiative, to get the seed they needed for this key crop.

Table 32: Percent of farmers who used each seed source during 2008/09 cropping season by crop across all sites

Source	Maize N=125	Ground nut N=98	Finger millet N=39	Cowpea N=40	Sorghum N=69	Pearl millet N=55	Bambara nut N=22
own stocks/ social networks	**62.4**	**58.2**	**74.4**	**60.0**	**81.2**	**92.7**	**59.1**
Retained	25.6	30.6	51.3	30.0	36.2	41.8	40.9
Carry over	7.2	1.0	0.0	0.0	1.4	3.6	0.0
Gifts from social networks	29.6	26.5	23.1	30.0	43.5	47.3	18.2
Seed markets	**39.2**	**32.7**	**12.8**	**7.5**	**2.9**	**10.9**	**18.2**
Local shops/vendors	16.8	19.4	0.0	5.0	0.0	5.5	9.1
Agro dealers	10.4	0.0	0.0	0.0	0.0	1.8	0.0
Contract growers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrigation scheme	2.4	0.0	0.0	0.0	0.0	0.0	0.0
Barter trade	6.4	10.2	10.3	2.5	1.4	1.8	9.1
Labor	3.2	3.1	2.6	0.0	1.4	1.8	0.0
Development interventions	**13.6**	**3.1**	**0.0**	**2.5**	**4.3**	**1.8**	**0.0**
Community groups	0.8	3.1	0.0	2.5	1.4	0.0	0.0
Extension/research	12.8	0.0	0.0	0.0	2.9	1.8	0.0
Seed/food aid	**20.8**	**3.1**	**0.0**	**25.0**	**23.2**	**7.3**	**4.5**
Seed aid direct distribution	16	3.1	0.0	20	21.7	5.5	4.5
Seed voucher	0.8	0.0	0.0	0.0	0.0	1.8	0.0
Food aid	4.0	0.0	0.0	5.0	1.4	0.0	0.0

Table 33: Percent of seed obtained from each source, in relation to total seed planted in 2008/09 cropping season across sites

Source	Maize	Ground nut	finger millet	cow pea	sorghum	pearl millet	Bambara nut
Own stock and social networks	**37.8**	**65.4**	**88.8**	**46.2**	**74.2**	**81.3**	**60.7**
Retained	19.1	47.4	50.5	24.8	56.1	45.3	50.7
Carry over	5.2	0.1	0.0	0.0	0.3	7.9	0.0
Gifts from social networks	13.5	17.9	38.3	21.4	17.7	28.1	10.0
Seed markets	**37.6**	**30.6**	**11.2**	**12.1**	**0.9**	**7.6**	**30.6**
Local shops/vendors	13.0	18.9	0.0	11.5	0.0	4.8	8.7
Agro dealers	14.1	0.0	0.0	0.0	0.0	1.7	0.0
Contract growers	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrigation schemes	1.3	0.0	0.0	0.0	0.0	0.0	0.0
Barter trade	6.1	8.9	6.7	0.5	0.3	0.3	21.8
Casual labor for seed	3.1	2.8	4.5		0.6	0.8	0.0
Development interventions	**13.3**	**1.8**	**0.0**	**1.1**	**4.4**	**3.4**	**0.0**
Community seed groups	0.1	1.8	0.0	1.1	0.2	0.0	0.0
Extension/research	13.2	0.0	0.0	0.0	4.3	3.4	0.0
Seed/food aid	**11.3**	**2.2**	**0.0**	**40.6**	**20.4**	**7.7**	**8.7**
Seed aid direct distribution	8.1	2.2	0.0	35.1	20.3	4.3	8.7
Seed voucher	0.8	0.0	0.0	0.0	0.0	3.4	0.0
Food aid	2.4	0.0	0.0	5.5	0.1	0.0	0.0

Seed maps

Community mapping of seed sources served to confirm findings on evolving seed source strategies. Communities groups worked together to map the seed sources for a particular crop, comparing current sources with those used during the five years previous. Site by site maps appear in Section VIII. Several examples showing the level of detail are given below.

Example: Pearl Millet; Beitbridge

For pearl millet in Beitbridge ward 10, all seed is now sourced local system through own stocks and gifts. Within the last five years, own stocks and gifts have remained important, but there have also been pearl millet-related interventions by World Vision, and, at time, farmers have gone to neighboring districts to get pearl millet seed.

Figure 7a. Beitbridge Sources of pearl millet seed during the 2008/09 season

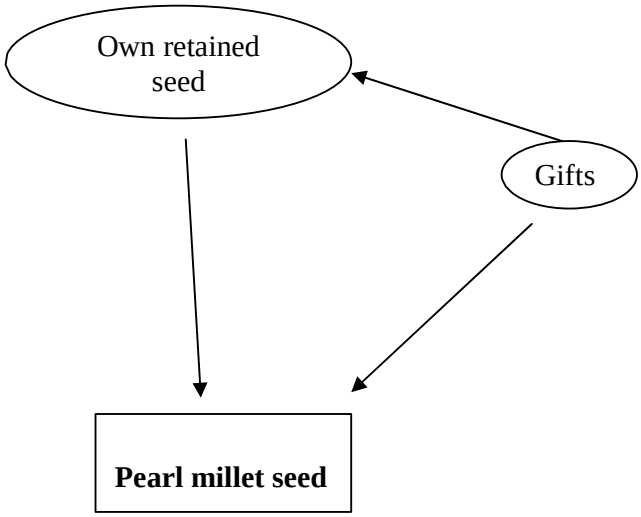
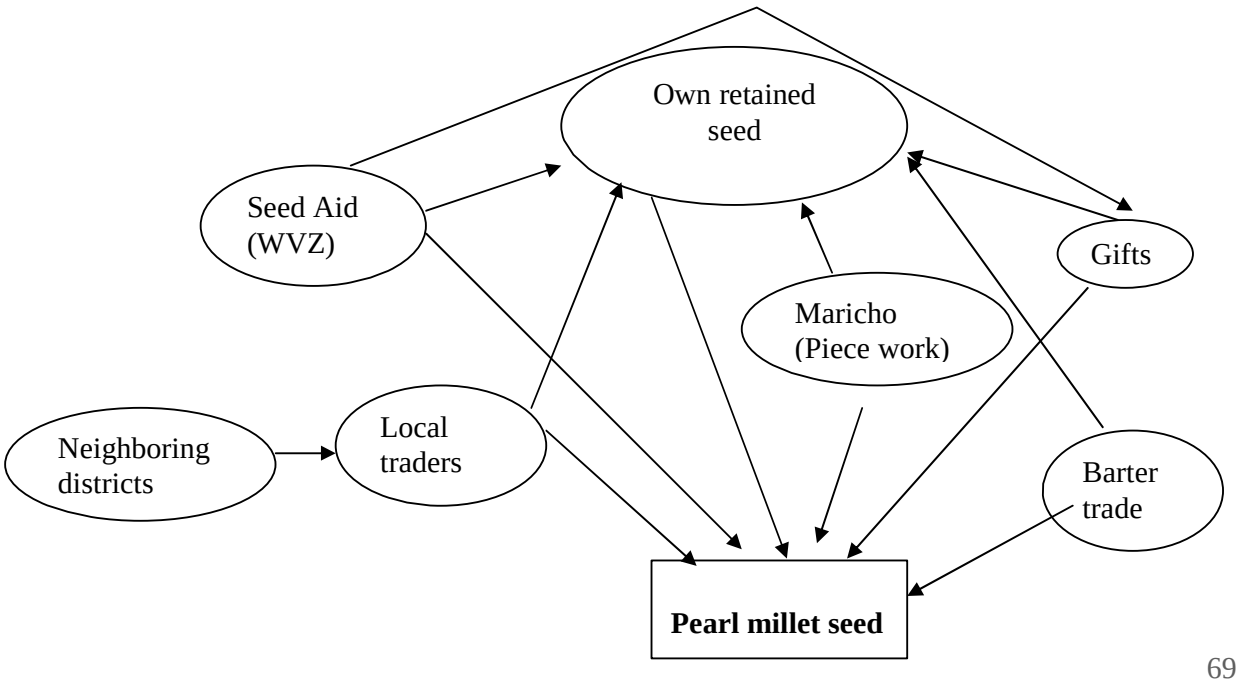


Figure 7b: Sources of pearl millet seed 5 years ago



Example: maize in Bikita

In Bikita, ward 15 , the primary sources of maize seed during the 2009/09 season were GMB seed and the Maguta program (GOZ) and retained seed from recycled hybrids SC513, open pollinated varieties ZM521, Red Cob and Hickory King. Other primary sources include the RBZ program sourcing from Pioneer Seeds, the informal market, mainly sourced from South Africa, and the SADC seed, sourced from donors. Very small amount came from maize selected from food aid (Figure 8a).

The customary sources in the past five years include CARE, GMB, and Masvingo Farm Supplies direct sales to farmers . Other sources include local shops and agro-dealers, and retained seed of hybrids and open pollinated varieties. Seed sources for maize have changed from the usual agro-dealers, NGOs, GMB and local retained seed to include very diverse options – SADC, RBZ, Food Aid and the Maguta Program.

Figure 8a: sources of Maize seed during 2008/09 season

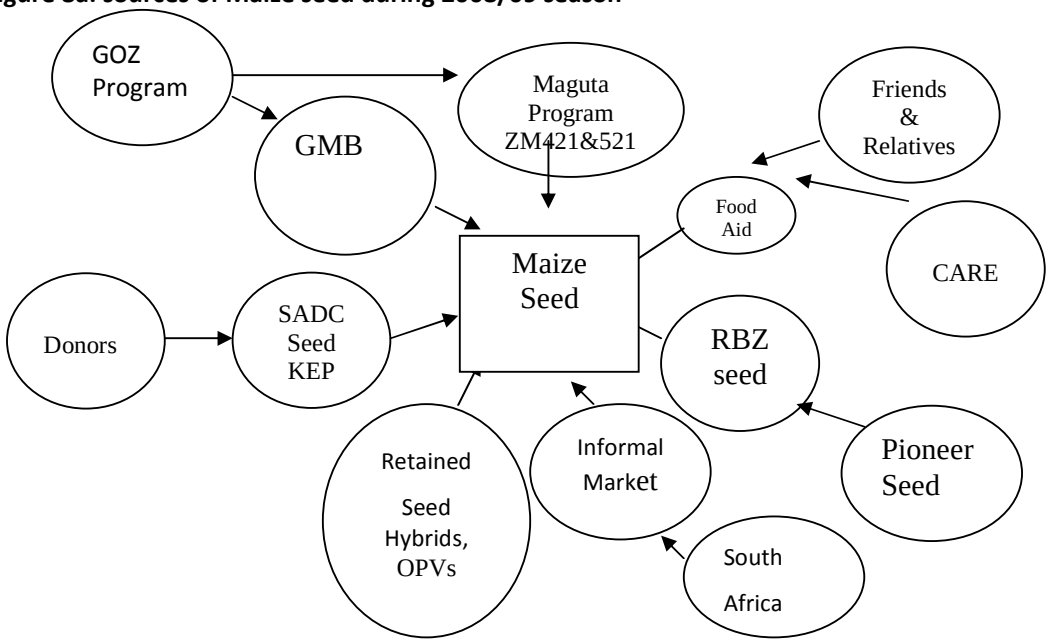
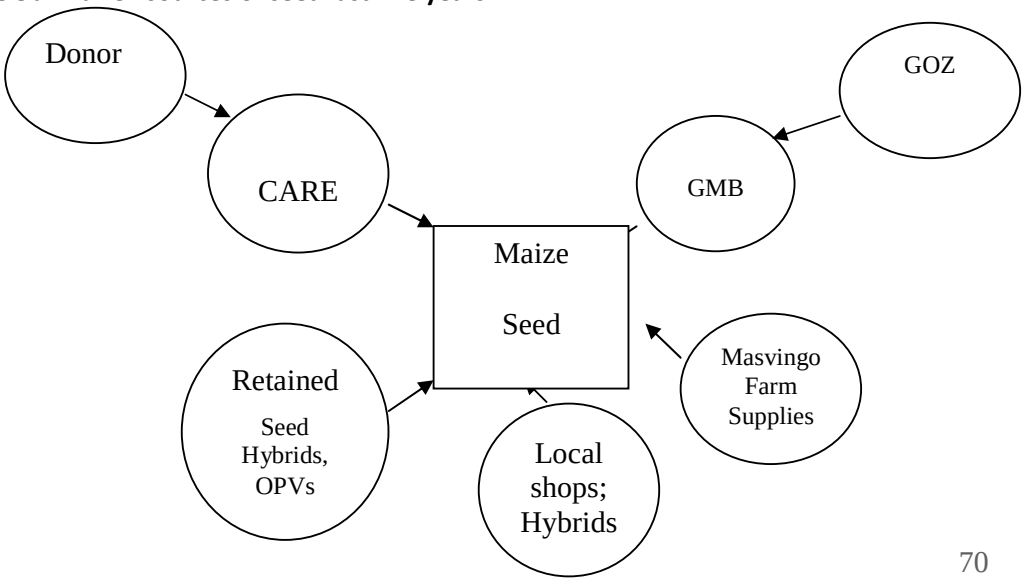


Figure 8b: Maize : sources of seed last five years



Proposed seed sources 2009/10

Double-checking strategies, the team also asked farmers to look forward to next season and describe which amount of seed they would obtain from which source (interviewers distanced themselves from appearing as potential seed suppliers).

Overall, farmers indicated they had clear possibilities for obtaining their seed requirements for all crops, except for groundnut. In fact, they could more than meet their requirements (Table 34 last row, figures greater than 100%) except for the 93%, or 7% shortfall, for required groundnut seed.

Generally for the small grains, farmers are counting mainly on their own stocks, supplemented by purchase at local markets. For the legumes, again, home-saved stocks and open markets will be used, with local markets being a main source particularly for Bambara nut. Cowpea, in Murehwa is an exception as the crop is relatively new and farmers still expect outside assistance from the NGO, World Vision especially for new varieties.

For maize, farmers have retained some stocks (recycled and carryover), but aim to purchase the bulk of the seed from agro-dealers: they sense such a strategy possible. Agro-dealers in all regions sampled during the assessment already have maize seed stocks and, financially, farmers are optimistic they can obtain cash needed for maize purchase. At the time of the assessment, it was not possible to confirm that all cash needed for maize purchase by farming families was available as the sale of the 2008/09 crops was ongoing: it is mainly from harvest sales that farmers expect to generate seed money. It was the primarily the cost of fertilizer, rather than seed, that farmers signaled as posing the larger problem (see Boxes 13 and 14)).

At this point, relatively few farmers are on counting on emergency aid for seed. This could likely change as during the course of the assessment in July, newspapers were already starting to advertise the upcoming free distributions.

Table 34: Farmers' planned seed sources for 2009/2010 cropping seasons, all sites (percent of seed expected to be accessed from each source)

Source	Maize	Cowpea	Groundnut	Bambara nut	Sorghum	Pearl millet
Own stock/social networks	**26.2**	**65.2**	**54.4**	**49.7**	**83.2**	**78.7**
Retained	20.5	62.9	48.3	41.3	77.7	71.2
Gifts from social networks	5.7	2.3	6.1	8.4	5.5	7.5
Seed markets	**58.9**	**25.7**	**33.3**	**61.4**	**21.6**	**21.0**
Local shop/vendor	23.8	9.9	10.1	0.0	9.3	9.2
Agro dealers	25.5	5.3	2.4	3.0	2.4	0.0
Barter trade	7.3	5.3	17.7	58.4	7.6	7.3
Contract growers	1.0	0.0	0.0	0.0	0.0	0.0
Urban markets	1.3	5.3	2.5	0.0	2.4	4.5
Irrigation scheme	0.0	0.0	0.5	0.0	0.0	0.0
Development interventions	**4.7**	**0.0**	**1.3**	**0.0**	**0.0**	**5.0**
Community based groups	0.0	0.0	0.0	0.0	0.0	0.0
Extension/research	4.7	0.0	1.3	0.0	0.0	5.0
Seed/food aid	**11.7**	**26.8**	**4.7**	**0.0**	**4.9**	**1.5**
Seed aid direct dist.	9.4	23.9	3.7	0.0	4.1	0.0
Seed vouchers	0.1	2.9	0.8	0.0	0.8	1.5
Food aid	2.2	0.0	0.3	0.0	0.0	0.0
% of seed to be sourced	101.5	117.7	93.7	111.1	109.7	106.2

Community assessment of seed security

Finally, as a cross-check to the above quantitative data, the community itself was asked to assess the seed security of its members. Seed Security was defined as either having the seed already in hand, or being able to access the seed with some certainty (though purchase, barter, gift, or other). Community meetings at all sites involved upwards of 50 people, men and women, and the discussions were intense and interactive. Table 35 presents the communities own assessment of those within the ward who they deem seed secure for the upcoming season, 2009/10. Seed security was assessed for the three most important crops as prioritized by the community group. The results surprised the assessment team. ***Except for groundnut, farming communities themselves assess they will be 90-100% seed secure for the upcoming season.*** For groundnut, much will depend on how much seed is put up for sale in September and October 2009, and for what price. For now, groundnut producers are holding onto to their stocks, anticipating that the prices will rise sharply as the planting season approaches.

Note that the qualitative community assessment largely correlates with the other information gathered during the SSSA: that is, with the quantitative results for 2008/09 and with the quantitative seed source projections for 2009/10.

The SSSA, reviewing the full evidence (qualitative and quantitative, from community and beyond), prefers to be a bit more conservative than the community in assessing seed security and the 'seed needy'. Much still remains unknown about prices to be received for produce sale . We suggest a figure of 10 to 15% of the maize needy, but highlight that much of this would be for the chronically poor.

Table 35: Community assessment of the percent of its members who are seed secure.

Crop	Murehwa	Tsholotsho	Bikita	Beitbridge
Maize	n/a	100	90	100
Groundnuts	100	75	75	90
Sorghum		100	100	100
Pearl Millet		100	100	99-100
Finger Millet	100		100	
Sweet Potato	100			

Note: n/a= data not available

Special note on SPR

Allied with the overall community assessment of seed security, the issue of 'eating all of one's seed' was raised: Do farmers eat their seed? if yes, how common is this practice and under what condition might it evolve? The answer across communities was a conclusive one. The practice is very rare even in extreme stress conditions--- unless seed of the right crops and varieties can be easily re-stocked. (Box 12)

BOX 12: DO FARMERS REALLY EAT SEED?

Seed is the input at the heart of agriculture. It gears what farmers will grow, if and when they will harvest. Seed, to produce, has to have a certain quality and has to be adapted to quite specialized circumstances, including, in Zimbabwe, often to drought conditions.

So do farmers really eat the family jewels?

Community discussions, intensively debated across sites, suggest that it is rare for farmers to eat their seed. Only the infantile, or poor managers would truly squander such an important resource.

There are, of course, standard exceptions, rooted in planned strategy. Farmers will eat their seed stocks If they can easily access desired seed again, as is the case for buying pulses on the open markets. Also, knowing that NGO or governmental aid is on the way, farmers might eat their recycled maize-- in anticipation of yet another free hybrid handout.

Post-script. Do farmers eat seed aid? : A women in Beitbridge shared her 2007 story. She only needed the two kilos of maize aid—-so boiled the other three . Relief aid gave her seed----and two full family meals).

SPECIAL ISSUES: SEED AID AND VARIETY ACCESS

Seed aid

The team only tangentially touched on emergency seed aid issues directly. Slightly over a third of those interviewed had received seed aid during 2009/10 with that group also having received seed a mean other 1.5 times over the last five years (Table 36). Seed aid was received mostly for maize, followed by cowpea and sorghum in areas newer crop introductions.

Table 36: Seed aid receipt in 2008/09

	Percent of farmers who received seed aid in 2008/209 cropping season	Percent of farmers who received seed aid in the five years prior to the survey	Average Number of times seed aid was received in the last 5 years
All sites	36.3	57.6	1.5
Murehwa	48.8	52.3	2.2
Tsholotsho	24.4	52.3	1.6
Beitbridge	31.6	57.9	1.4
Bikita	40.0	47.5	1.3

Looking at the whole sample, almost 60% (57.6) have received seed aid over the last five years, with the figures changing only slightly when full seed aid history is assessed. Basically, much of their seed aid is recent. Of interest is that there is not a big difference in times seed aid has been received between the higher and lower stress areas (e.g. comparing Murehwa and Tsholotsho). As expected, the Beitbridge sample has been involved in emergency seed aid receipt to a slightly higher degree.

Access to new varieties

Trying to assess the degree to which emergency seed aid might be a source for innovation, the team compared the frequency with which new varieties were received by farmers in an 'emergency intervention versus the frequency through which they were proffered within developmental initiatives. At this point, emergency has been more important than routine research and development work (R+D) in exposing farmers to novel crops and varieties (Table 37). This trend can be partially understood given the limited resources availed to AGRITEX and other government agencies for R+D over the last five years for circulating in rural areas. However, it might be questioned whether emergency initiatives should make novel introductions (if or when) (Sperling *et al.,* 2006), as emergency personnel might not be able to provide farmers with the much needed technical advice and multi-season follow-up.

Table 37: Access to new varieties through seed aid and development interventions

Location	Number of observations	Ever received new varieties through seed aid (%)	Receive new varieties through development interventions (%)
All sites	165	45.8	25.3
Murehwa	43	40.0	17.6
Tsholotsho	42	55.3	34.8
Beitbridge	40	48.8	9.3
Bikita	40	37.2	37.2

FERTILIZER USE

Fertilizer use was briefly assessed across the four sites. The results can be considerable only as suggestive, as intensive analysis and cross-checking of data was not possible.

Crop emphasis

Farmers use fertilizer on a routine basis particularly in the better rainfall sites of Murehwa and Bikita. In 2008/09, they continued to use fertilizer in these two sites in particular, with a significant drop in use only in Bikita (Table 38).

Table 38. Use of fertilizer in the sampled areas across sites

	% of farmers who usually use fertilizer	% farmers who used fertilizer in 2008/09 cropping season
Over all sample (All sites)	62.18	49.09
Murehwa	97.14	90.70
Tsholotsho	46.34	35.71
Beitbridge	20.00	17.50
Bikita	90.00	50.00

Fertilizer use was overwhelmingly concentrated on maize but the sample sizes being too small to make conclusions on the other crops (Table 39). While over 70% of those interviewed indicated that their fertilizer use was 'abnormal' for the 2008/09, the quantitative data on rates of application does not give the same clear picture.

On average famer s used a total of 115.78 kgs (among those who applied fertilizer) although with the rates having a large standard variation (+/-128.99). This translates to or 8.10 kgs/1 kg of seed or 202.50 kg/ha. Such rates seem well within the range of 'normal', as Murehwa farmers might use 300-400 kg , wth estimates suggesting Tsholotsho farmers applying 75-150 kg/ha and those in Beitbridge using even lower amounts.,

Table 39. Crops on which fertilizer was applied

Crop	All sites N=93	Murehwa N=37	Tsholotsho N=28	Beitbridge N=5	Bikita N=23
Maize	64.5	94.6	42.9	60.0	43.5
Cow pea	5.4	0.0	7.1	0.0	13.0
g/nut	7.5	5.4	10.7	0.0	8.7
Pearl millet	3.2	0.0	7.1	20.0	0.0
Sorghum	19.4	0.0	32.1	20.0	34.8

Price

The fundamental concerns raised by farmers about fertilizer had to do with price, and especially the very high terms of trade. For example, according to farmers in Murehwa, the fertilizer cost is now is five times (500%) that which it was just 2-3 years ago. The prices are somewhat difficult to calculate exactly- as the country has moved from barter equivalents to US$ currency rates. Box 13 shows actual fertilizer prices in sweet potato equivalents, as this was the means by which farmers paid for their fertilizer inputs.

BOX 13: HOW MANY BUCKETS FOR A BAG? TRADING SWEET POTATO FOR FERTILIZER

The price of inputs has skyrocketed in the last few years—and farmers in Murehwa are particularly concerned about fertilizer costs.

"Before" , 2-3 years ago,

1 bag of fertilizer (50 kg) could be exchanged for **3 buckets** of sweet potatoes

Now in 2009

1 bag of fertilizer (50kg) costs 30 US$

1 bucket of sweet potatoes sells for 2 US$

1 bag of fertilizer (50kg) costs the equivalent of **15 buckets** of sweet potatoes.

So a bag now costs 5 times (500%) what it did a few seasons ago.

MONEY: Purchasing Power/ Access to Currency/ Understanding US$ Value

Across sites, the overwhelming issues in terms of seed security—did not directly relate to seed at all. THE critical issues revolved around money and purchasing power. Prices for inputs were high (see Section VIII), and farmers felt they were not getting adequate prices for their produce (which at the time of the assessment was just at the point of sale—to generate needed liquidity). Box 14 gives an indication of such inputs in relation to funds received for harvest sale.

BOX 14: COST OF PRODUCTION: IS IT REALLY WORTH PLANTING MAIZE IN 2009/10

The relative costs of inputs needed to plant an acre of hybrid maize appear below. The focus has been simplified to include only seed and fertilizer. Labor costs have not been added. Nor have transport costs been added, should the farmer not sell locally, and move the maize grain to outlets such as the Grain Marketing Board.

Even a quick sketch shows that the Zimbabwe farmers in 2009/10 will receive very modest economic returns on his/her maize production. For sale on the market, farmers will have (at most) a $US54 profit margin per acre ($166-112). Profits for sale to the GMB will depend on transport costs—and the ability of the GMB to make purchases at all.

To plant an acre of maize

10 kg seed=	US$ 22=	11 buckets sweet potatoes
2 bags Compound D fertilizer	60	30 "
1 bag ammonium nitrate	30	15
cost of direct inputs	**$ 112**	**56 buckets**

Return from sale at local market	***Return from sale to GMB***
1500kg/18 kgs= 83 buckets= **US$ 166**	1500kg= **US$369** ($246/mt) But- transport costs not included!

The change to the new currency was welcomed by many as it has relatively stable value and helped to stimulate the return of goods onto shelves. However the move to the US$ has also brought a number of distinct disadvantages. As there is basically no change available (nothing under US$1), prices are being inflated up to the higher units. Also, getting currency notes, the FOREX, either individually, or into local commerce, has taken more time than will be expected. (Some of the small notes, US$1 and 2, are being re-used and reused—and quickly are tattering into shreds). Farmers also do not have an intrinsic sense of the currency and particularly how their produce should be valued in the new FOREX. Even open market traders were quite unsure of how the currency changed itself will affect prices for inputs as sowing season arrives.

So, in brief, the issues related to money are multiple, and distinct . They include:

- lack of actual currency notes in rural areas (individually, and in commerce)
- lack of change (small money) associated with the currency- which in itself leads to higher unit costs (as merchants round up)
- lack of farmer purchasing power, especially in relation to low prices received for produce
- Unfamiliarity with value of currency, including uncertainty of how the new notes in themselves will affect open market prices

Box 15 further elaborates on specifics of current challenges. The main point is that these challenges are real and compelling and need to be addressed immediately. **Any aid given should be given with a keen vision for lessening these urgent constraints: money has to get into communities--- and quickly; commerce needs to be stimulated and ; and purchasing power strengthened**. Obviously, there is no one magic bullet for addressing these

multiple and complex problems. improvements can be made step by step--- if those making emergency aid (and development) decisions are aware of and sensitive to these primary constraints.

BOX 15: HOW THE CURRENCY CHANGES AFFECTS FARMERS' AGRICULTURAL DECISIONS

Zimbabwe officially abandoned the local Zimbabwe-dollar (ZWD) for other more stable foreign currencies (FOREX), such as the South African rand (ZAR), United States Dollar (US$) and the Botswana Pula among others. This decision was made as the ZWD was very prone to hyper-inflation ---and savings, pricing, access and use of the currency proved difficult. The introduction of the FOREX was initially applauded by many, including farmers, as agricultural inputs began to be found again on the formal market. Prices for maize seed and fertilizer companies have settled at about US$2.00 per kg of seed and about US$0.60 per kg of fertilizer. Although these are comparable to regional prices of an average of US$ 650/mt, the move has been ' a bitter pill to swallow' for small scale farmers.

Rural farmers have also indicated that FOREX is difficult to access and they feel most of their produce is being under-priced. For instance, if one uses sweet potato equivalents, Murehwa farmers can only buy a bag of fertilizer at 5 times the rate of what they needed 2 or 3 years ago (Box 13). These high costs have affected all inputs such as seed, labor, fuel and draught power hiring. Although farmers reckon that FOREX is easy to save, since it is not affected much by inflation, they have challenges to raise surplus money to save. During the ZWD era, money was traded on the informal 'black market' at exorbitant rates, yet 'dollarization' has ushered a new crop of money changers who are exploiting the farmers using what is being called a 'cross rate'. This is when products charged in ZAR are converted to say US$ at a lower rate or vice-versa to benefit the vendor. Most of the farmers are not sure of which crops to grow because of these 'unfair' price regimes.

SUMMARY: ACROSS SITE FINDINGS

Overall the seed security situation of the four wards assessed proved to be much better than the team had expected and had been led to expect. This is especially true in light of the 2009/10 donor and government plans for US$ 140 million of emergency seed and fertilizer, and given the official calculations that one half of the farming population, or 600,000 households are in critical need of input help.

Communities themselves were quite positive in their overall seed security assessment. For small grain seed, all could meet 100% of their seed needs. In two the four sites, communities signaled groundnuts as a potential problem for about a quarter of families, depending on the supplies to on offer in open markets at sowing time, (Groundnut is not being put forward in the aid package?) The community assessment for maize seed security was very good: 90-100% of households have in stock or can access the seed they need, mainly through direct purchase. Such community assessment correlated to a high degrees with the quantitative findings from the 165 individual interviews.

Reviewing the overall evidence (qualitative and quantitative data) , the SSSA team would be slightly more conservative than the community in assessing security. Particularly for maize, we would put figures of ' maize needy', at around 10% or a high of 15% , with many of these needy would falling into the normal chronically poor category.

This 10-15% figure for maize-related aid is based on an assumption that other farmers will have the opportunity to themselves acquire needed inputs. This implies that input supplies of seed and fertilizer will continue to reach rural shops in important quantities, *and that the emergency aid process will not waylay the much needed supplies.*

The strength of the informal seed systems was of particular note in the assessment findings. Potential seed available in community-based groups and in open markets, generally looked well filled and sorted- and appeared in abundant quantity. The 100mt available for sale from but a single farmer field school 0FFS) group in Tsholotsho is a signal of both the strength—and potential- for supporting and professionalizing the seed security roles of these informal or local systems.

Related to seed per se, the only critical issue found by the SSSA is related to formal sector functioning. Given the last few years of policy challenges (especially price control, and currency value breakdown), this sector will take time to recover. However, even during the short period of the field SSSA, agro-dealers were starting to open their doors , general delivery dealers were starting to stock packets and even non-specialty stores (food stores, clothes shops) were starting to stock 5 and 10 bags of maize seed here and there. Evidence clearly shows that this sector is starting to put supplies on offer--and farmers already buying. One immediate challenge related to the formal sector supply, and specifically to agro-dealers, is to make sure they remain open and do not fold again.

Fertilizer assessments were not done extensively. Communities themselves raised access to fertilizer rather than to maize seed per se, as the major constraint, mainly due to its unusually high cost. SSSA team calculations reinforce the community assessment of the relatively high costs of production, and especially of fertilizer, in relation to remuneration received for maize grain sale.

The SSSA found that the overriding problem around the issue of seed security, and the functioning of seed systems more broadly, had little to do directly with seed at all. Immediate and key constraints revolve around money and purchasing power: the terms of trade for farmers have escalated enormously; farmers were just starting to market produce and were concerned about low remunerations ; there is little actual cash (and particularly $US currency notes) in rural economies.

As the next section moves toward making recommendations, we underline here the prime challenges for addressing seed security concerns at this highly fluctuating time in Zimbabwe:

- To restart and reinforce the formal sector seed and input supply—supporting not undermining fledging efforts; and
- To inject cash into local economies

These two BIG challenges should help shape immediate seed security interventions across and within the sites of assessment.

VII: FIELD FINDINGS AND RECOMMENDATIONS SITE BY SITE

This section contains the field notes of the four site assessments. They should be of interest to development and humanitarian aid professionals working in these particular zones of action: Murehwa, ward 14; Bikita, ward 15; Tsholotsho, ward 12; and Beitbridge, ward 10.

The seed system security assessments on focused on local , community-based concerns. The field reports review the current seed security situation and then tie the findings to action in specific zones, both for the short and for the medium term. The site-specific recommendations appear at the end of each site report.

These site-specific field reports, together, provided the basis for the chapters 'Field Finding: across Sites' (VI) and 'Overall Recommendations: across sites' (VIII).

Seed System Security, July 2009: Murehwa District

Part of the seed assessment in Zimbabwe focused on the socially cohesive north-eastern administrative district of Murehwa in Mashonaland Province. It is predominantly a high maize growing area and has relatively high rainfall (>700mm/year) and declining soil fertility. The assessment was carried out in ward 14, Chanetsa area, in July 2009.

Overview of Crop and Livestock Production in the District

The Murehwa community has a complex agricultural system based on field crop, livestock and horticultural crop production. The agricultural system in this area has been based on the three sectors: the commercial sector mainly focusing on maize, soybeans and wheat; the small scale commercial farmers mainly growing maize, tobacco and other crops such as groundnuts and soybeans; and the communal sector which has a widest range of crops. Households in communal Murehwa mainly grow maize, finger millet, groundnuts and sweet potatoes. According to AGRITEX, communal farmers constitute more than 80% of the population with a land holding of 1.5-2.5 ha per household. There has been a significant change in the types of crops grown and marked crop yields decline between 2004/05/06 seasons and 2008/09 (see table 40 below).

Table 40. Production trends for major crops in Murehwa district

Season	***2004/05***		***2005/06***		***2008/09***	
Crop	**Total area planted (ha)**	**Yields (t/ha)**	**Total area planted (ha)**	**Yields (t/ha)**	**Total area planted (ha)**	**Yields (t/ha)**
Maize	47,298.15	1.8	36,320.50	1.2	35,550.0	0.62
Groundnuts	10,363.02	0.9	871.3	0.9	7,580.0	0.6
Soybeans	1469.81	1.0	1368.5	1.2	2901.5	0.7
Cowpeas	76.86	0.4	150.0	0.5	2139.0	0.4
Sunflower	2225.42	0.4	1299.0	0.5	5317.0	0.5
Sweet potatoes	1214.2	4.0	2867.0	4.2	6200.0	3.5
Sugar beans	685.17	0.8	1557.0	0.6	27772.0	0.5

Source: Murehwa District Agricultural Extension Office (DAEO), July 3, 2009

There has been a decline in livestock holdings. The major livestock in Murehwa are cattle, goats, sheep, pigs, donkeys and poultry. Table 41 below shows the livestock number for period 2003 to 2009.

Table 41. Number of livestock by type for Murehwa district

Year	**Cattle**	**Goats**	**Sheep**	**Pigs**	**Donkeys**
2003	117,400	14,712	5,137	10,637	799
2004	112,200	14,463	4,110	9,891	794
2005	97,520	13,113	3,897	7,993	797
2006	95,528	12,215	2,866	5,121	692
2007	88,239	11,905	2,812	3,013	720
2008	86,527	11,817	2,423	2,330	795
2009	70,000	10,028	1,082	2,814	259

Source: Murehwa District Agricultural Extension Office (DAEO), July 3, 2009

Community Perspective on Key Agricultural Trends

Season Quality (good or bad season)

It has been over a decade since the Murehwa community have experienced what they can term a good season. A 'good' season was defined by the community as one: in which rainfall is good and evenly distributed (without a mid-season drought;, in which 'the inseparable twins – seed and fertilizer' are easily accessible; and in which communities are able to access seed and plant on time to be able to attain good yields. Based on these perceptions, communities ranked the 2008/09 season as 'average', 2007/08 as 'poor' and 2006/7 as 'average' in terms of season quality and crop production. In 2008/09 rains were fairly good but the distribution was poor. As in the past four seasons, maize seed was not available on the formal market, but was rather mostly found on the informal market at exorbitant prices of as high US$50 for a 10kg pack. However, some of the farmers used seed they have carried over from the previous season (2008/09) Maguta program (which was distributed late) and others from NGOs such as CRS and Community Technology Development Trust (CTDT/COMMUTECHH).

On rating the 2007/08 season as poor, the community indicated that below normal rainfall was received: it was poorly distributed and ended as early as February, negatively affecting critical crop growth stages. This was exacerbated by the high rate of loss of value of the local currency and unprecedented inflation, thus rendering fertilizer, labor and fuel expensive.

The community drew similarities between the 2006/07 and the 2008/09 season which were both average. Although these two were similar in-terms of rainfall, the 2006/07 season was better since fertilizer and hybrid seed were available at vendor shops and agro-dealers in Harare, at Murehwa Centre and at local agro-dealer shops. During the 2006/07 season, most farmers in Murehwa could afford purchasing fertilizer since as little as 2 by 50kg bags of sweet potatoes sold at Mbare could raise enough to buy a bag of fertilizer: thus input access was better than 2008/09. Also in that year, CRS and CTDT held seed fairs and other households got seed from these aid-related. At least seed was distributed on time and most was planted as opposed to the 2008/09 season where up to 50% of seed aid was not planted.

Fertilizer Channels

Crop production without the use of fertilizer in Murehwa is almost a non-starter. According to the District Agricultural Extension Officer, the most important factor affecting crop production in the district is fertilizer availability, then draught power, seed and rainfall (quantity and distribution)-- in that order. Getting access to fertilizer was also assessed as the most important constraint by the community as well. Most of the farmers in Murehwa normally use fertilizer (see table 42).

Table 42. Fertilizer use in Murehwa

Description	% of Households (based on responses)
Usually use fertilizer	97.1
Used fertilizer 2008/09 cropping season	90.1
The strategy for fertilizer was normal	20.9

Most of the soils in the district are sandy to sandy-loam, formed from the granite parent rock with poor inherent soil fertility. Hence almost all crops in the district require fertilizer and/or manure. Most of the farmers access fertilizer from local vendors in Murehwa or Harare or on

the 'black market' at unusually prices as high as US$60/50kg bag. Recently, fertilizer supply has improved significantly on the formal market and prices have stabilized at US$ 30-34 per 50kg. The general practice is that farmers purchase fertilizer when they sell their own produce at market. Before the dollarization, farmers reckon that fertilizer was easy to access since they could sell two 50kg bags of sweet potatoes to buy a 50kg bag of fertilizer. However, the current fertilizer prices require the farmers to sell 7-10 by 50kg bags of sweet potatoes at the market at an average price of US$ 5/bag. However, during stress times, farmers may even use 'manure tea', a liquid from soaked manure as top dressing fertilizer and some could even use human urine as copping strategies.

Trends in crops grown

According to the community, the major crops grown in the district are maize, finger millet, groundnuts and sweet potatoes. They indicated that in the 1990s maize was the major crop in terms of both importance and area planted, constituting more than 50% of the land allocation, with groundnuts and other crops such as sweet potatoes, finger millet and Bambara nuts and rice (grown then) sharing the other 50% land allocation. Since the turn of the millennium (nine seasons ago), maize has remained a major crop but its land allocation has been declining. Sweet potatoes have became a major cash crop and finger millet has replaced groundnuts as the second most important crop as finger millet substitutes for maize as a cereal during drought periods. Due to the decreases in annual rainfall and its poor distribution, wetland crops such as rice have been abandoned in favor of crops which can withstand adverse conditions, such as cowpeas and cassava. Other than sweet potatoes becoming a cash crop and maize converted from being also a cash crop to predominantly a food crop, economic challenges have led to the introduction of other crops such as sunflower. This is mainly used to extract cooking oil, with the residual 'cake' being used to feed livestock (chickens and/or cattle). In the same period , soybeans, initially a commercial sector crop is being adopted by the communal farmers. The soya is used to make flour which is used to bake bread, and they are also sometimes pressed for soya-milk.

Table 43. Crop production in Murehwa district, by season and crop-use

Crop	Use for Food	Use for Income	Comments
Rainy season (Summer): October to April			
Maize	H	L	Only sold when households need inputs
Finger millet	H	M	Mainly used in the off season to brew beer for sale
Groundnuts	H	L	Processed into peanut butter, used as a substitute for cooking oil.
Sweet potato	M	H	Has been used as a cash crop but the market is no longer lucrative.
Soybeans	M	L	Processed into a range of by-products such as bread, milk, scones etc
Cowpeas	H	L	Has poor market
Sunflower	H	L	Extraction of oil and cake is used for livestock feeds
Beans	L	-	Low production, mainly in gardens
Rice		L	No longer a popular crop
Cassava	L		A minor crop
Sorghum	L	-	A minor crop
Post-rainy season (Winter): May to September			
Horticulture	H	H	Used for both relish and income generation.

Key: H=High, M=Medium, L=Low

Source: Murehwa Community Focus Group, July 2, 2009

Trends in varieties grown

Farmers in Murehwa mainly grow hybrid maize particularly SC 513, PHB 30G97 and DK8031, which are produced by commercial seed houses. These have replaced old hybrids such as SC 501 and SR 52. Although COMMUTECHH has introduced two improved Open Pollinated Varieties (OPVs) of maize such as ZM 521, ZM 421 and others through Participatory Plant Breeding in Farmer Field Schools, these have not been as popular as the local traditional variety called 'garabha' or 'mabhagu' . Areas planted to the local usually increase during periods of high stress, such as after a drought or when inputs are scarce. The local variety is normally grown in gardens in winter so as to save the germplasm.

Table 44. Type of the varieties planted of the selected important crops, Murehwa

Crop	Local	Modern	OPV	Hybrid
Maize	13.2	0.000	3.0	83.8
Sweet potatoes	97.2	2.8	0.0	0.0
G/nuts	84.2	15.8	0.0	0.0
finger millet	100.0	0.0	0.0	0.0

All finger millet varieties grown are local or traditional varieties called 'gwezere' and madhura': groundnuts varieties are also mainly old. Groundnut varieties grown include: natal common, bob white, valencia and makulu red, as well as a few modern ones such as Nyanda and Aqua (introduced by COMMUTECHH). Farmers in Murehwa have two popular local sweet potato varieties 'Ngoronhatu or Ngoroshanu' and 'shirikadzi' which constitute the bulk of the varieties grown. Farmers have also accessed improved sweet potato variety locally called Birchnough, the name indicating the place were the initial planting material was collected from by the farmers during an exchange visit (correctly called Brondal).

Table 45. Farmers' assessment of performance of varieties planted in 2008/09 cropping season

Major crop planted)	**Performance of variety planted (%)**			**% of farmers who would re sow the variety**
	Poor	Average	Good	
Maize varieties	20.93	37.21	41.86	71.43
Sweet potatoes varieties	11.1	22.22	66.67	100.00
G/nut varieties	8.3	37.50	54.17	100.00
Finger millets	22.7	27.27	50.00	86.36

Most of the farmers evaluated the maize varieties they sowed in 2008/09 season as average or good in performance, and over 70% were willing to continue planting these varieties. A minority indicated the maize varieties they had sown were not appreciated. (Note: Most of this was relief seed). Continuous use of one crop variety has its own weakness. In Murehwa, local finger millet varieties called 'gwezere' and 'madhura' are now susceptible to pests and diseases and some farmers are worried about them, which was probably the reason why some farmers were not willing to plant these again. Some new varieties have been introduced through relief and development seed channels. For instance, CTDT introduced new groundnut varieties called Nyanda and Aqua, and a cowpea variety called CBC 1. New sweet potatoes varieties called Brondal and Nemagold have been introduced by CTDT. Planting material for the crop is usually preserved as 'live seed banks' *in-situ* in gardens and protected wetlands.

Seed Channels

A good portion of the maize crop sown in the 2008/09 season came from farmers' own stock (retained or carryover) or from shops (local shops and agro-dealers). Seed aid and government programs also provided about ¼ of the seed which farmers in the Murehwa sample sowed. Planting material for the other crops was, and continues to be based on the local seed systems. Farmers keep their own seed of local maize varieties, groundnuts, finger millet, cowpeas, soybeans, beans, sorghum and sunflower as seed and sweet potatoes as runners in gardens.

Prior to March 2009, maize was a controlled product, and it was only allowed to be sold and bought by the Grain Marketing Board (GMB). Over the past 5 to 10 seasons, relief seed aid has been delivered through the GoZ-controlled channels partially coordinated by the Ministry of Agriculture's through AGRITEX, GMB-managed input loan scheme, the Zimbabwe National Army (ZNA)-led Operation Maguta, the Reserve Bank of Zimbabwe (RBZ)-input scheme and the recent Southern Africa Development Community (SADC)-sponsored input scheme (only in 2009). Most of the seed was distributed late and hence farmers could usually store for the next season. Non-governmental organizations (NGOs) have also distributed seed through relief seed aid, assistance through developmental projects and seed fairs. Farmers normally keep their own seed for local OPVs which they then use in high stress times such as droughts ('garabha' or 'mabhagu', also identified as 'Hickory King'). Despite hybrid maize seed being difficult to access on the formal market, a number of farmers purchased from local vendors and agro-dealers. Gifts also were a very important source for maize seed. Relatively little seed was procured via barter or casual labor (Table 46).

Table 46. Percentage of seed planted in 2008/09 cropping season by source, Murehwa

Seed Source	% of seed that came from the source by crop		
	Maize	Groundnuts	Finger millet
Retained	11.68	69.19	49.44
Carry over from previous season	14.00	7.53	0.00
Local shops	14.15	0.00	0.00
Agro dealers	8.98	0.00	0.00
Community groups e.g. FFS	0.00	0.22	0.00
Gifts from relatives/friends	17.73	8.49	30.95
Barter/purchase from relatives	1.35	12.73	12.61
Government programs (Relief)	18.72	0.00	0.00
Seed aid direct (NGOs Relief & dev)	8.98	0.00	0.00
Casual labor	4.42	1.85	7.00
Total seed (%)	100.00	100.00	100.00

Table 46 also shows that crops such as groundnuts and finger millet were distributed mainly through the informal seed channels, such as use of home-saved seed, gifts from relatives and friends, bartering for other seed types, grain, livestock etc and eve exchange for labor. This use of the informal seed system which has multiple seed channels is critical because weaknesses or failures in one channel can be compensated by another (Sperling, 2008).

Is seed relief the option? Table 47 shows that significant percentage of the relief seed , almost half, accessed in 2008/09 was not planted. In the case of maize, although some of the seed was planted, some was also stored, maybe for use in 2009/10 season (this was mainly SADC seed distributed late). Some farmers donated the seed as gifts to relatives and friends

and a very few ate the seed. All cowpea seed from seed aid was planted probably because farmers thought it was an early maturing variety and would still produce leaves and grain even when planted later in the season.

Table 47. Utilization of seed aid by the beneficiaries among the sampled farmers in Murehwa site

Crop		Maize			Cowpeas		
Type of use	**N**	**Mean**	**Std. Dev.**	**Utilization (%) in whole sample**	**Mean**	**Std. Dev.**	**Utilization (%) in whole sample**
Planted	17	5.3	6.9	51.3	0.647	1.539	100.0
Eaten	17	0.9	3.6	8.6	0.0	0.0	0.0
Give as gift	17	0.6	2.4	5.7	0.0	0.0	0.0
Exchanged	17	0.0	0.0	0.0	0.0	0.0	0.0
Stored	17	3.5	5.2	34.4	0.0	0.0	0.0
Total				100.0			100.0

Seed Source Mapping: Seed channels for the major crops (Maize, Finger millet and Groundnuts)

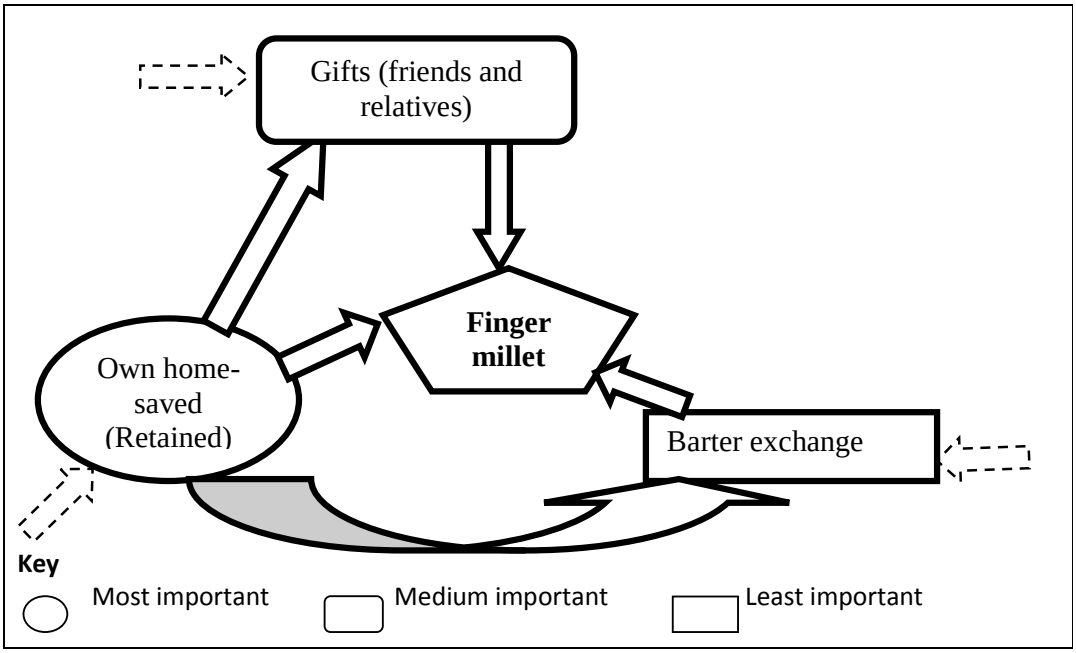


Figure 9. Channels through which farmer source finger millet seed. *Finger millet seed was procured solely from the informal seed channels mainly home-saved (retained) seed, gifts from friends and relatives and bartering. Community members indicated that finger millet seed was easily accessible from relatives and friends, as compared to crops such as groundnuts, Bambara nuts, cowpeas, soybeans or sunflower.*

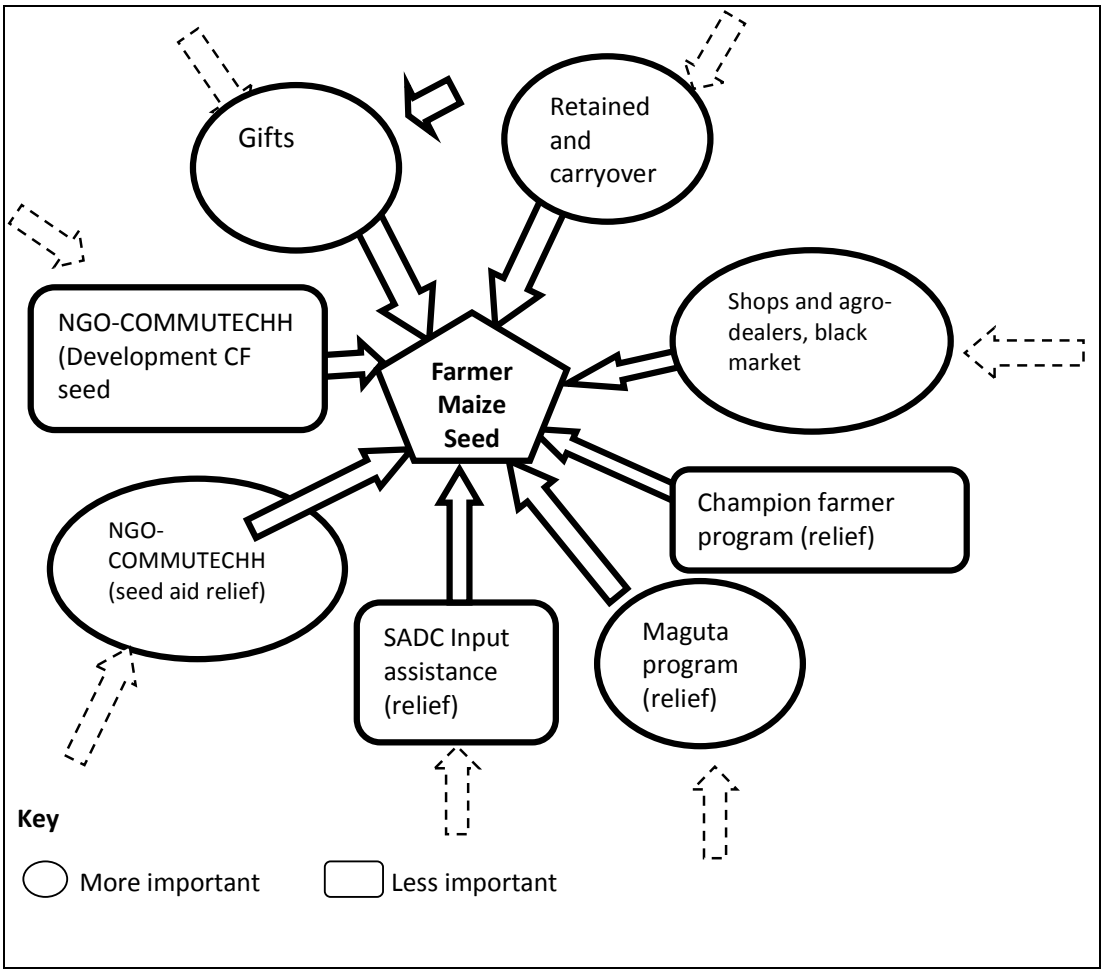


Figure 10. Channels through which farmer source maize seed, Murehwa

The main sources of maize seed in Murehwa for season 2008/9 were farmers own stocks (retained and carryover), gifts and seed relief. Government programs (such as Operation Maguta and Champion farmer input schemes), SADC-sponsored inputs and seed aid constitute the predominant relief sector. There was also seed assistance through development projects such as conservation farming and purchases from the 'black market' in Murehwa or Harare. These constitute the 'formal' channels. Farmers' own stock (usually local variety 'garabha'), barter exchange (for other seed types, grain, food or livestock etc), gifts and selection from grain (own harvest) constitutes the informal channels. Note that most of these sources have other links (traceable to origination). Diagram based on Sperling (2008) p 6.

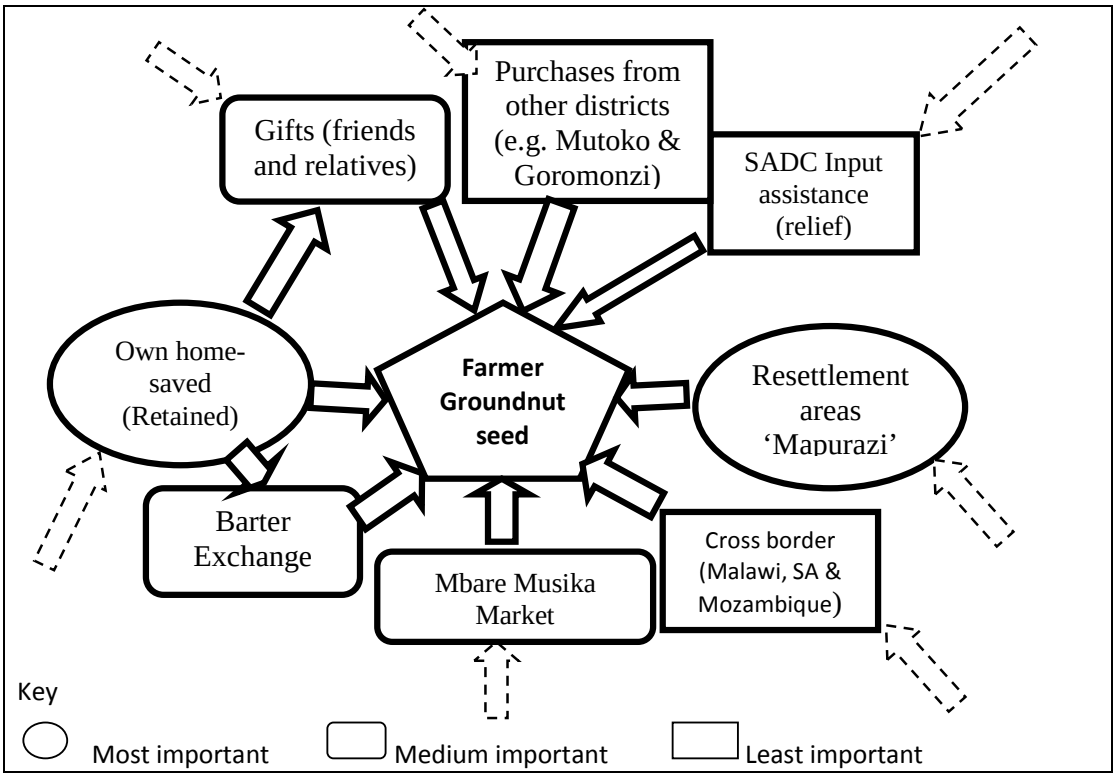


Figure 11. Channels through which farmer source groundnut seed. *Ground seed sources: Mainly from the informal seed channels such as home-saved (retained) seed, this can be accessed by other farmers' thorough gifts, barter exchange for grain, other seed types or even livestock. Farmers can also access seed from the open markets such as Mbare Musika, A2 resettlement areas and other districts such as Mutoko, Goromonzi and as far as other countries such as Malawi, Mozambique and South Africa.*

Seed harvest to sowing ratio

It is well known in Zimbabwe that farmers keep their own seed for most of the crops, such as local and improved OPV maize varieties, groundnuts, finger millet, cowpeas, soybean, sunflower and sugar beans. Seed for these crops is usually drawn from the previous harvests. Thus, it is against this background that seed needs can be quantified through a simple calculation called the 'harvest to seed' ratio. The greater the multiplication rate of a crop/variety, the smaller the proportion of the harvest is needed to meet the sowing need for the next season. In times of good harvests farmers in Murehwa may keep more than they normally require as they give as gifts or may trade the extra seed in exchange of other crop seed, grain, livestock, labor and even money. Of course, the seed harvested has to be of acceptable quality, so sometimes the harvest to sowing ratios might be higher, as grain has to be sorted—to obtain acceptable quality seed.

Table 48. Sowing needs per household: Local variety maize and finger millet, Murehwa.

Seed Parameter	Local Maize variety (Garabha, Hickory king)	Finger millet
Planted area per household (ha)	0.4	0.2
Seeding rate (kg/ha)	25	8
Sowing needs (kg)	10	2
Multiplication rate (grain produce divided by seed sown)	40	100
Harvest (kg)	400	200
% of harvest required to meet sowing needs (100 divided by multiplication rate)	2.5	1.0

This means that a farmer only needs 2.5% and 1% of his/her harvest for maize and pearl millet respectively. However, the percentage may increase slightly in stress conditions such as droughts, as the crop harvest decline.

Table 49. Sowing needs per household: groundnuts and cowpeas, Murehwa.

Seed Parameter	Groundnuts	Cowpeas
Planted area per household (ha)	0.25	0.2
Seeding rate (kg/ha)	100	100
Sowing needs (kg)	20	20
Multiplication rate (grain produce divided by seed sown)	10	12.5
Harvest	200	250
% of harvest required to meet sowing needs (100 divided by multiplication rate)	10	8

Legume seed is difficult to manage. However, farmers in Murehwa only need 10% and 8% of their harvest for groundnuts and cowpeas respectively. The message from the two tables is consistent – a fall in crop yields does not necessarily imply a seed shortfall. However, seed quality can be an issue during high stress times such as droughts.

Markets Overview

Informal markets

a) Farmer sellers

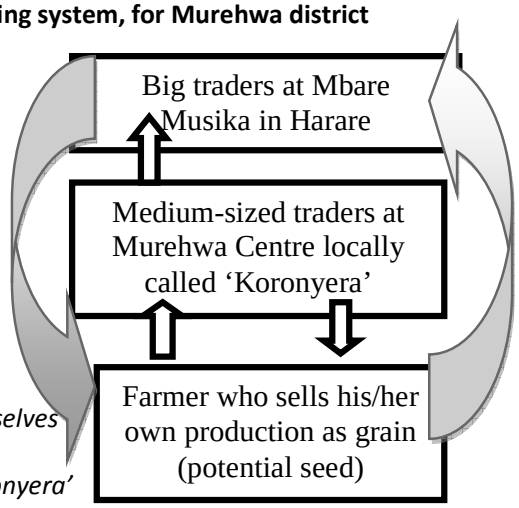
Farmers in Murehwa purchase 'potential seed' for crops such as groundnuts, cowpeas, Bambara nuts, many varieties of bean, sunflower and sorghum in local informal markets at Murehwa Centre or even as far as Mbare Musika in Harare (about 85km away). Much of the potential seed is locally sourced: farmers come to the markets to sell their produce to buyers. The open market recognizes that some of the grain sold is actually potential seed and this is manifested in the increase of prices towards planting time. Prices of potential seed may double in September just before planting season.

Figure 12. Three levels of grain (potential seed) trading system, for Murehwa district

- *Usually based at Mbare Musika, Harare*
- *Buys from farmers and mid-traders*
- *Select and sort as 'potential seed'*
- *Sells to farmers at the market*

- *Usually gets produce from farmers*
- *Select and sort as 'potential seed'*
- *Predominated by women*
- *Can re-sell to farmers during shortage*

- *He/she sells directly to neighbors*
- *Also sells at the local Murehwa market themselves*
- *And at Mbare Musika too.*
- *At times sells to mid-level traders called 'Koronyera'*



b) The Mid-level buyer:

Middlemen locally called 'Koronyera', who can either be local or from Harare, buy much of the produce for resale. After these local middlemen, (60-70% the majority whom are women) have bought this produce as food or potential seed (depending on crop), they move to a place where it can be sold at a profit, such the road-side of Murehwa-Nyamapanda highway. Some middlemen sell to bigger traders at Mbare in Harare, about 85km away. For instance, farmers sell a 20l tin (bucket) of groundnuts at US$2.00 for re-sale locally for US$3.00, or as high as US$4.00-5.00 at Mbare. Generally, the crops they trade include groundnuts, Bambara nuts, cowpeas, beans, maize and vegetables such as butternut, tomatoes, onions etc. As the rainy season approaches, August onwards, prices may rise by as much as two to three-fold since select stocks will now be sold as 'potential seed'. The middlemen usually sort and select the products for sale as potential seed. Potential seed is also sold in the supermarkets, usually packaged as food.

c) Big traders

Big trades are usually found at Mbare Musika market. They have a wide range of market clientele, including: the urban people who normally by for food, rural farmers who buy for food as well as potential seed. Buses going to and from almost all destinations in Zimbabwe are hosted at Mbare market: hence it provides an important and lively trading locale. Murehwa farmers get most of their agricultural inputs from vendors at this market.

Formal markets

The formal market is mainly focused on hybrid maize seed from major seed houses, such as Seed Co, Pannar, Pioneer etc. Pioneer Seed Company is the closet to Murehwa (about 40km away) and has agro-dealers at Murehwa Centre, such as A1 Seeds.

a) A1 seeds and other smaller shops: A1 Seeds is an agent of a number of seed companies, such as Pioneer and some vegetable seed companies. There are other small hardware shops which sell seed and fertilizer. However, during the period of the field assessment, controls seemed somewhat lax on quality and some of these outlets were repackaging

the fertilizer and seed in smaller packs. These were being sold at US$ 1.00/kg for fertilizer, meaning a 50kg bag priced at US$34.00 goes up to a cumulative US$ 50.00/50kg. Maize seed was also being repackaged into smaller packs of 2kg per unit.

b) Seed Company of Zimbabwe (SeedCo) - SeedCo re-opened their seed shop/depot in Murehwa on July, 03, 2009, for the first time since 2007/08 season. They have 30mt of seed available for sale and they can access more if stocks are selling. They have two varieties: short-medium variety SC 513 and medium-long variety SC635. The company sells only for cash and does not give credit.

Table 50. Maize seed stocks at Seed Co Depot, Murehwa

Crop	Variety	Units /Packets	Unity Price (US$)	Total quantity (mt)
Maize	SC 513	10 kg	22.00	-
	SC 513	25 kg	50.00	-
	SC 635	25 kg	70.00	-
Total				30

Source: Seed Co Deport, Murehwa, July 4, 2009.

It is the first time in more than six years that seed has became available from the formal sector as early as July. This means farmers can access the hybrid seed early enough for the 2009/10 agricultural season, which commences in October/November.

Box 17: Pioneer Seed Company: Boora Growth Point, near Murehwa

- *Company only deals in hybrid maize only and not OPVs.*
- *They have a total of 42 growers each with an average of 50ha*
- *The company started harvesting in March, which they do at 35-40 moisture content*
- *Packages their seed in 2kg (only on demand e.g. for supermarkets targeting urban farmers) 5kg, 10kg and 25kg packets.*
- *The current price is US$ 2000.00/ton (i.e. approximately US$ 20.00/10kg pocket)*
- *The company used to be seed exporters but now they are importers.*
- *Initially produced up to 5,000 MT per season in 2003 when but this season they have 4,000MT and are able to import more quickly from their sister company in SA*
- *Last season (2008/09) the bulk of their seed was distributed through the seed relief by government through the RBZ input scheme and through NGOs*
- *Have sales representatives in all provinces in the country who identify and liaise with Agro-dealers and other Seed House Agencies*
- *For the 2009/10 season they have already started distributing their seed through Agro-dealers*

Source: Pioneer Seed Company, Boora near Murehwa, July 2, 2009

Prices

Fertilizer and maize seed are already available on the formal market, well in advance of the planting season, for the first time in more than six years. The dollarization has resulted in the stabilization of prices, with fertilizer ranging from US$ 30.00 to 34.00/50kg. Maize seed was being priced at US$22.00/10kg and US$ 50.00/50kg at the Seed Co depot. At Pioneer, the seed was priced at US$ 2,000/ton.

Gender Aspects in Seed: Special Women's Issues

Is there anything called women's crops? Women in Murehwa confirmed that women are usually responsible for ensuring 'food is there on the table' and getting relish and nutritious foods. Crops usually associated with women include: groundnuts, Bambara nuts, sweet potatoes and cowpeas. Women manage these crops, including the phases of securing seed, field management, post harvest handling and for modest marketing. However, when a crop within their domain becomes lucrative, men usually adopt it too, as is the case with sweet potatoes.

For 'women's crops, women usually can make independent decisions about their use and manage proceeds from their sale (sometimes used to buy kitchen utensils). Seed for all the women crops is found in the informal seed sector and is not very difficult to access. Although the last seasons have not been especially productive ones, women in Murehwa have generally managed to keep their seed for all the crops. Those who do not have seed can barter, work for seed *(maricho),* and receive gifts from friends and relatives or purchase. Women in Murehwa participate in most agricultural related issues, for example they constitute more than 80% of farmer field school membership in the district.

General Summary

The major limiting input in Murehwa is fertilizer, although the farmers recognized that the 'two twins' seed and fertilizer always move together. They were quick to indicate that they hate 'seed aid dependency', and indicted that receiving free distributions is just not sustainable. The only seed they have had difficulties in accessing over past five to six years has been hybrid maize seed. Seed of all the other crops, such as groundnuts, finger millet, sunflower, Bambara nuts, sweet potatoes, soybeans and even local maize 'garabha' has been available and accessible within the informal sector. The community would prefer: input loan schemes; the revival of input supplies through local agro-dealers; and would appreciate interventions which will improve their access to cash. One community member noted that, "Money that has value is not easy to access", meaning the US dollar, SA rand, Botswana Pula and other currencies currently being used in the Zimbabwean economy.

Recommendations: Murehwa

1. **Focus assistance on fertilizer support**
   The community in Murehwa was greatly affected by the continuous absence of fertilizer on the formal market in the past five to six years. This has been exacerbated by the controlled pricing of the commodity which led to its availability mostly on the 'black market'. The dollarization of the economy has improved its availability. The Murehwa community would require fertilizer-oriented support, at least to boost their production since the product seems to be priced beyond their reach. Maybe a fertilizer voucher, redeemable at agro-dealers is an option.

2. **Support Agro-dealers to re-open their facilities in rural areas.**
   When designing interventions, intentional efforts should made to ensure that they do not compete with the local agro-dealers, but rather complement their efforts. There is need to consider a voucher-based subsidized input scheme whereby an NGO, such as CRS or CTDT, can facilitate a relationship between the local agro-dealers and seed houses and fertilizer companies, so that these suppliers can provide inputs closer to rural populations, and in formats small farmers can access. This is a critical time for the newly re-opened agricultural input dealers: it is vital that intervention support the agro-dealer, growth rather undermining their potential.

3. **Focus greater attention on non-maize innovation**.
   A lot of research in the country has been on hybrid maize seed : relatively modest work has been effected on the other crops. There is need for conscious efforts to introduce new improved varieties of a range of crops, such as groundnuts, Bambara nuts, finger millet and sweet potatoes. Although some varieties were introduced by relief seed aid and at times developmental projects, this has been done without the necessary agronomic back-up and technical support. There is need to ensure that varieties are introduced through the existing extension mechanisms. The introduction of new varieties for these crops could be through organized farmer groups, such as farmer field schools. Such a means of introduction will ensure that the new introduced varieties are evaluated by the community and that they filter through the community with some rapidity.

Seed System Security, July 2009: Bikita District

Introduction

A seed security assessment exercise was done in Bikita District by a multi-sector team in August 2009 as part of a larger seed security assessment covering four sites in Zimbabwe.

Bikita district is located in agro-ecological region IV in Masvingo Province, but also has characteristics of region III along the main mountain range, Devule, that demarcates it from the Devule Wildlife Conservancy. The current estimated population is around 500,000, made up of approximately 100,000 farming households. The people have a distinct tradition of eating a particular type of stinkbug, known in local parlance as 'harurwa'. According to community discussions, the bug is roasted to an appetizing light brown color for the table or for sale at the nearby growth centers. Most people in Bikita originated from Sedzi, Mutoko, Mt Darwin and Manyika in the north east, Chimanimani and Chipinge in the east, Hwedza and Buhera in the north, Matabeleland in the south and Guruswa in Mozambique.

Agricultural Overview

Major crops grown are maize, finger millet, groundnuts and Bambara nuts, cowpeas, sugar beans and sweet potatoes. Sorghum and pearl millet areas are increasing, probably for beer brewing and sale that are on the increase as a coping strategy. Maize, groundnuts and sugar beans rank high for both household food and income; finger millet is high for income, used mainly for beer brewing but medium as a food crop; Bambara nuts and cowpeas are medium for food and income purposes. Table 51 presents uses and importance of the various crops grown in Bikita.

Table 51: Crop uses and relative importance, Bikita

Crop	Food	Income
Maize	- Staple *(sadza)* - Animal feed - Roasted *(maputi)* - Roasted and ground into powder *(mbwirembwire)* - Boiled *(mangai)* H	- Sold as grain - Used for beer brewing which is sold H
Finger millet	- Millet Meal *(sadza)* - Fermented drink *(maheu)* M	- Beer H
Groundnuts	- Roasted - Peanut butter H	- Roasted and sold - Peanut butter for sale H
Bambara nuts	- Boiled - Relish M	- Sold unprocessed M
Pearl millet	M	M (grown by few people)
Cowpea	M	M
Sugar beans	H	H (indicated very high)
Sweet potatoes	H	M
Soybeans*	H	M

H = high importance for indicated function; M = medium importance for indicated function

Additional crops which are grown on a very small scale by farmers in Bikita include sunflower, peas, sorghum and wheat. A summary and trend of all the crops grown, areas allocated for each crop and the yields obtained in the past 5 years are given in Table 52.

Table 52: Crop Production (2004/05 to 2008/09), Bikita

Crop	2004/05		2005/06		2006/07		2007/08		2008/09	
	Area Pltd (ha)	Yld T/ha	Area Pltd (ha)	Yld T/ha	Area Pltd (ha)	Yld T/ha	Area Pltd (ha)	Yld T/ha	Area Pltd (ha)	Yld T/ha
Maize	35791	0.25	37673	0.8	36182	0.5	36023	0.25	33113	0.5
Finger millet	11200	0.25	13863	0.5	13069	0.4	11578	0.3	15874	0.4
Groundnuts	13770	0.25	13056	0.5	8263	0.4	12520	0.25	11540	0.5
Pearl millet	4397	0.2	3126	0.6	2686	0.3	2495	0.25	5431	0.3
Sorghum	850	0.1	3202	0.6	2176	0.5	3412	0.3	7348	0.3
Sunflower	200	0.3	164	0.5	92	0.1	185	0.1	754	0.3
Cowpeas	0	0	96	0.25	0	0	78	0.1	965	0.2
Soybeans	39	0.2	49	0.5	123	0.1	0	0	32	0.3
Cotton	3359	0.5	3318	0.6	1676	0.5	5567	0.55	3147	0.5

Source: AGRITEX Bikita. Yld = Yield; Pltd = Planted; ha = hectare

According to AGRITEX and community discussions, areas planted to maize is decreasing, while areas planted to finger millet, pearl millet and sorghum have significantly increased – suggesting that these small grains are replacing maize areas. Area planted to groundnuts decreased from 2004/05 to an all time low in 2006/07, increased in the following year but dropped again. It has not reached previous high levels.

Maize area decreased somewhat from 2005/6 to present but it still clearly dominates and as the staple crop. Yield levels are erratic and reflect quality of season – low in 2004/05, 2007/08, modest in 2005/06, 2008/09, and relatively high in 2005/06.

Sorghum area significantly increased in 2005/06, trebling the 2004/05 areas. Further dramatic significant area planted increased in 2008/09, more than trebling area planted in the previous year. Cowpeas, a new crop, significantly increased in area. Reduction in yield is probably due to aphid attacks which communities mentioned during group discussions. Cotton, another new crop, had comparable areas planted in 2004/05, 2005/06 and 2008/09, and probably responded to low prices on the market.

Livestock trends are given in Table 53.

Table 53: Livestock trends in Bikita

Livestock	Year				
	2004	2005	2006	2007	2008
Cattle	87,922	89,443	88,006	87,570	86,000
Goats	76,800	77,113	76,707	76,001	77,111
Sheep	5,997	6,000	6,552	6,809	6,100
Pigs	2,248	2,200	2,315	2,251	2,221
Donkeys	2,500	2,400	2,437	2,802	2,650

Source: AGRITEX Bikita

Though currently at the lowest, the number of cattle has remained somewhat steady over the past 5 years, only varying by not more than 2000 from year to year. The droughts, floods,

outbreaks of diseases or other stress factors have not significantly changed the numbers, as probably overall mortality has been compensated by births. The goat numbers situation is the same, with a range of 1,112. Sheep also follow the same trend with a range of 812. The same trend is true for pigs. During stress periods when households face food insecurity, it is common to sell off small stock to raise money for food and other needs – a standard coping mechanism. When large numbers of households face crisis, small-stock numbers tend to decrease, but this is not the case in Bikita. Note that these aggregate numbers do not show changes in ownership within – - that is, poorer households selling to better-off households who may keep rather than kill the animals.

Community Perspective on Key Agricultural Trends

Community perceptions about positive trends and a good season in Bikita include a combination of: adequate well-distributed rainfall ; availability and affordability of seeds, fertilizers and other materials like agro-chemicals; and availability of these inputs in sufficient quantities at the right time, before the start of the season. Perceptions about a poor season and negative trends are the opposite: poor rainfall and significant shortages of seed, fertilizers and chemicals, inadequate draft power and political instability.

Season Quality

Based on these perceptions communities ranked the past 2008/09 season as 'medium', 2007/08 as 'poor' and 2006/7 as 'average' in terms of season quality and crop production.

Good rains were received in 2008/09 but maize seed was not widely available, appearing mostly on the informal market at exorbitant prices around US$40 for a 10kg pack. The season was a mixture of misfortunes: seed aid started late in December/January, some seed aid OPVs did not perform well, fake seed was sold clandestinely, pesticides for stalk borer control were not on the market, and flash floods reduced crop performance in certain localities. At the start of the season in October, most traders preferred and traded in the US dollar because the local currency was losing value too quickly. Many farmers did not have the US dollar as previous crop products had been sold in local currency – hence they effectively could not purchase inputs on the market.

The 2007/08 season was poor in most respects: the little rainfall received was poorly distributed and ended too early, negatively affecting critical crop growth stages. The high rate of loss of value of the local currency and unprecedented inflation was catastrophic for farming operations. Many could not withdraw their payments for crops sent to GMB because of very low bank cash withdrawal limits – in some instances several times lower than bus fare to rural areas. It was difficult to find the local currency and most outlets did not accept checks. The situation was particularly hard for rural farmers who had no alternative sources of income except the money 'trapped' in the banks.

The 2006/07 season was average, substantially more productive than the 2007/08 season but worse than the 2008/09 season. Rainfall was erratic in places but fairly good in other locations, and crop production was average. Seed and fertilizer were available at local agro-dealer and general dealer shops but deliveries were late and many farmers could not secure these on time. The high inflation rate and general economic decline exacerbated the situation, preventing substantial purchases of inputs. A good portion of the seed aid received, particularly from CARE, was re-distributed by recipients to other farmers in the area.

Trends in Bikita Agriculture as described by Community

The positive trends experienced are the introduction of conservation farming into the faming system, especially for households which do not have draft power, food aid from NGOs especially during times of hunger, and satisfactory extension work by AGRITEX officers. The negative trends include the general hunger, erratic rainfall, and shortage of agricultural inputs, poor soils getting poorer and political instability that disturbed agriculture.

Crops gaining / decreasing in area

Crops gaining in area are finger millet, sorghum, cow pea, sunflower, Bambara nuts, sweet potatoes and soybeans. Finger millet seed is easy to obtain within the community hence it easily replaced maize areas. Cowpea and sorghum were given as seed aid and naturally grew in area, replacing maize in the process. Seed of sunflower, Bambara nuts, sweet potatoes and soybeans was easy to find within the community and these crops are normally cultivated without fertilizers, making the switch from maize also fairly easy. Such diversification might be seen as a positive trend – potentially bringing greater production stability and more nutritional balance. Though maize is a staple crop and is cultivated on up to 50 percent of the fields, areas allocated to maize have been reduced due to difficulties in securing hybrid maize seed and fertilizer on the market. Groundnut areas have also been reduced due to difficulties associated with securing groundnut seed.

Varieties gaining / decreasing in area according to the community

New maize varieties have been introduced in Bikita: ZM521 - an open pollinated variety that performed well in Chivaka and Chinyamagona villages and SC 513 , a new maize variety from SeedCo, which is in demand : agro-dealers are currently selling this popular variety. Pioneer varieties 30G19 and 32G30 are also gaining ground and in demand. A formerly popular SeedCo maize variety, introduced more than 15 years ago, R201 was phased out and replaced by SC501, which in turn was also replaced by the current popular SC 513. There has been no major change to varieties for groundnuts, pearl millet and finger millet. One groundnut variety, Falcon was introduced some time ago and quickly disappeared.

Results of the individual household qualitative questions on the type crop and variety cultivated are given in Table 54.

Table 54: Type of the varieties planted by crop among the sampled households in Bikita

Crop		Type of varieties grown			
	Frequency	Local	Modern	OPV	Hybrids
Maize	62	12.9		12.9	74.19
Groundnuts	18	77.8	22.2		
Finger millet	19	100			

The majority of farmers planted hybrids, but much of this was actually recycled hybrid seed, second or third generation. Very few people grew local and OPV. The majority of people grew local groundnuts and finger millet varieties.

Farmers' assessment of performance of varieties planted in 2008/09 cropping season is given in Table 55.

Table 55: Farmers' assessment of performance of varieties planted in 2008/09 cropping season , Bikita sample

Crop	Total number of respondents	Percentage of farmers evaluating the variety performance			% of farmers that would re sow the crop variety planted in 2008/09
		Poor	Average	Good	
Maize	74	13.5	33.8	52.7	62.2
Groundnuts	21	33.3	47.6	19.0	95.2
Finger millet	19	15.8	47.4	36.8	100.0
Bambara	10	30.0	40.0	30.0	100.0
Sorghum		18.2	18.2	63.6	81.8

The majority of farmers rated the performance of the maize variety planted in 2008/09 as average to good, while a very small proportion thought it was poor. Many would replant the same maize variety. Two thirds of respondents rated the groundnut variety planted as average to good while a third thought it was poor, and almost all would replant the same seed. The majority of respondents rated finger millet, Bambara nut and sorghum seed planted in 2008/09 as average to good, and many would replant the same seed next season.

Sources of Seed in 2008/2009 season, and for the past 5 years

According to community discussions , the primary sources of maize seed during the 2009/09 season were GMB seed and the Maguta program (GOZ) and retained seed from recycled hybrids SC513, open pollinated varieties ZM521, Red Cork and Hickory King. Retained maize seed is selected for desirable traits in the field during harvesting / dehusking, kept separate from ordinary grain and later planted at the onset of the rainy season. Other primary sources include the RBZ program sourcing from Pioneer Seeds, the informal market, mainly sourced from South Africa, and the SADC seed, sourced from donors. Very small amount came from maize selected from food aid (Figure 8a).

The customary sources in the past five years include CARE, GMB, and Masvingo Farm Supplies direct sales to farmers . Other sources include local shops and agro-dealers, and retained seed of hybrids and open pollinated varieties. Seed sources for maize have changed from the usual agro-dealers, NGOs, GMB and local retained seed to include very diverse options – SADC, RBZ, Food Aid and the Maguta Program.

Figure 13a: Sources of maize seed during 2008/09 season, Bikita

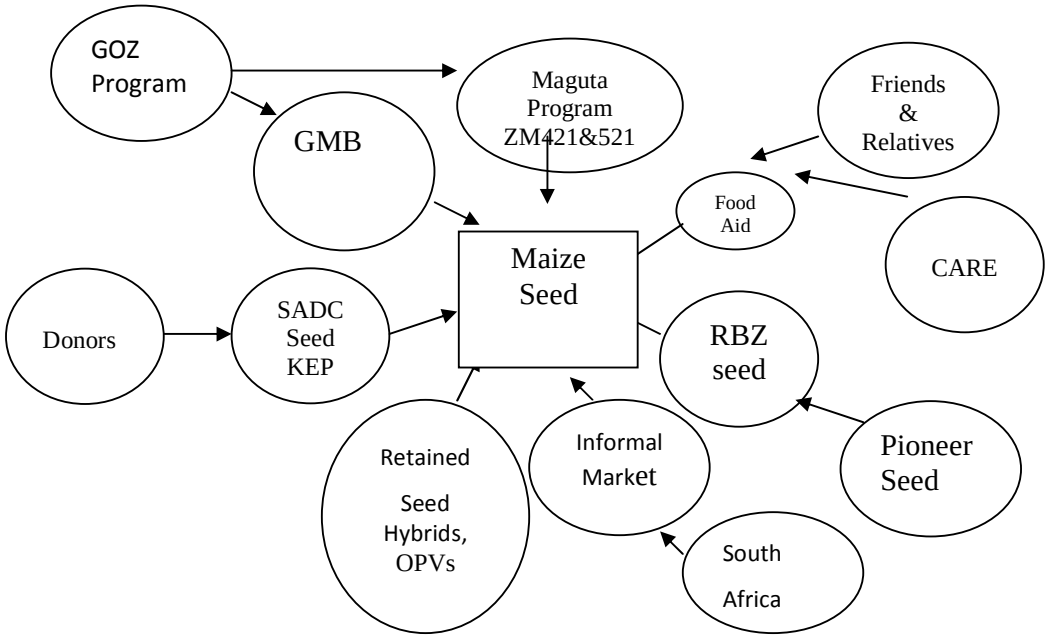
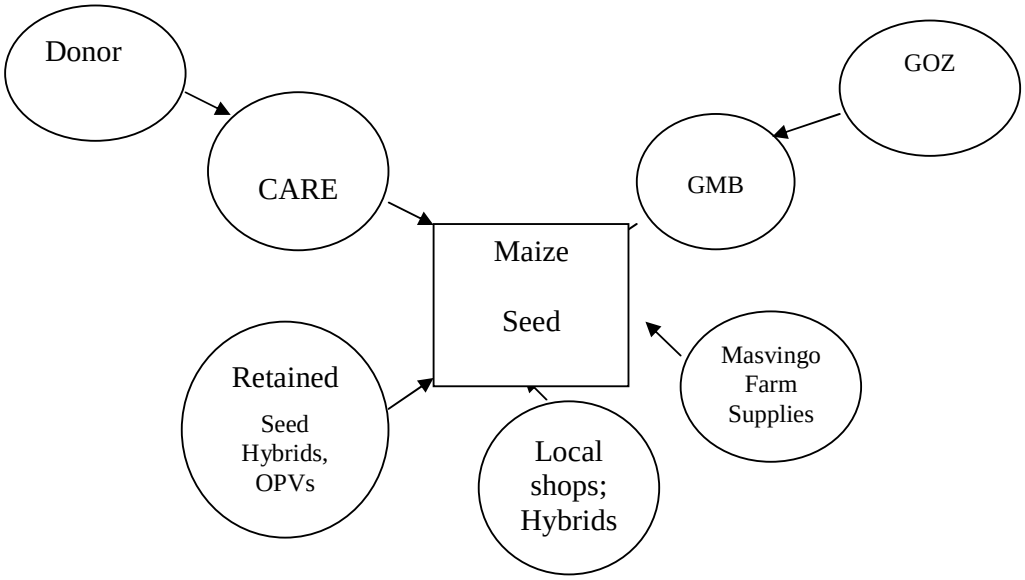


Figure 13b: Maize : sources of seed last five years, Bikita



The proportions of seed planted in 2008/09 cropping season and the various sources of that seed is given in Table 56.

Table 56: Percentage of seed planted in 2008/09 cropping season that came from each source, Bikita sample

Source	Maize	Ground nut	Finger millet
Own stock/social networks	**27.85**	**72.7**	**99.72**
Retained	15.71	57.87	72.61
Carry over	0.7		
Gifts from relatives/friends	11.44	14.83	27.11
Seed market	**15.15**	**18.08**	**0.28**
Agro-dealers	11.98	0	0
Contract growers	0	0	0
Irrigation scheme	0	0	0
Barter	3.17	18.08	0.28
Casual labor	0	0	0
Development interventions	**23.25**	**0**	**0**
COMMUTECH*	0.28	0	0
Extension	22.97	0	0
Seed/food aid	**17.33**	**9.04**	**0**
Seed aid	15.36	9.04	0
Seed vouchers	0	0	0
Food aid	1.97	0	0

* Local Non Government Organization

Farmers principally source maize, groundnuts and finger millet seed from own seed and social networks. Maize seed has diverse sources, own stock being predominant, followed by development projects, seed aid and the seed market. Such comparable diverse sources mentioned in the individual interviews, and corroborated in community discussions, imply the existence of a robust maize seed sourcing system. Many respondents sourced the majority of groundnuts from own stocks and social networks, followed by purchases from the seed market, and seed aid. Finger millet sources are largely own stocks and social networks.

Table 57: Average and Poor Farmer Groundnut Harvest and Proportion of Seed Requirements, Bikita

Groundnuts	**Average Farmer**	**Poor Farmer**
Surface area planted in hectares	0.9	0.1
Seed need for area	90kg (Seed rate is 100kg/ha)	0.01kg
Harvest	720kg (Might use 800kg/ha lime or less quantity gypsum)	40kg Less capacity to weed (Might use 400kg/ha lime or less quantity gypsum)
% Harvest needed for seed	12.5%	25%

Comparisons of the average and poor farmer illustrate how poor farmers may have inadequate groundnut seed for planting. The average farmer needs just 12.5% of harvest whereas the poor farmer needs to retain 25% of harvest as seed.

From the community discussions, seed sources for most crops in the last season and the past five years are largely locally- retained seed, seed swaps / exchanges, seed payments for

casual labor and NGO supplied seed for last season and the past five years. Finger millet was largely obtained from retained seed, that is, selected while in the field for desirable traits like disease tolerance and / or high yield, separated from the rest of grain and safely stored for planting. Many households grow finger millet, and seed is available and accessible to all households – hence most are seed secure.

Approximately 80 percent of households grow sorghum for food and beer brewing and most households are seed secure, the main source being retained seed. Selection for sorghum seed also starts in the field for desirable traits and the same process is used as for finger millet seed selection. Less than 5 percent of households grow pearl millet and all are seed secure. The main seed source for pearl millet is retained seed; the same seed selection process is used for pearl millet as for finger millet and sorghum - choosing from the field for desirable traits.

All households grow groundnuts but seed may not always be available at time of planting. Approximately 25 percent of households are seed insecure at time of planting but will eventually plant the crop after swapping with some of their grain, or doing casual work and being paid in groundnut seed (at the rate of half the quantity planted if the casual work entailed planting groundnuts). During the past season, the primary groundnut source was retained seed, identified during harvest for desirable traits like large size and kept separately from the rest of the crop. The secondary sources of groundnuts were seed exchanges, casual labor and local shops, all transacting retained seed. In addition to these primary and secondary sources, groundnut seed in the past 5 years was obtained from primary sources, GMB supported by the secondary source GOZ, and CARE supported by secondary source of donors.

Table 58: Adaptations in seed source, varieties and quantities planted, Bikita

Crop	N	% of farmers who used the sources they wanted to use	% of farmers who planted the varieties they wanted to grow	% of farmers who used evaluated the seed condition as 'good'
Maize	40	42.50	55.00	92.50
Ground nut	19	68.42	94.74	100.00
Sorghum	11	45.45	90.91	100.00
Bambara nut	9	66.67	77.78	100.00

N = Respondents

Most farmers planted the maize seed varieties they wanted to grow, but less than half used the sources they wanted to use: this reflects on limited sources – and the absence of agro-dealers last season. Few farmers used the quantities they wanted to use. However, almost all farmers regarded seed condition as good.

Most farmers planted groundnut, sorghum and Bambara nut seed varieties they wanted to grow and regarded the seed condition as good. Sources for groundnut and Bambara nut were the ones farmers wanted to use. Less than half wanted to use the sorghum seed sources actually used.

Table 59: Amount of seed farmers usually use and the required amount for the 2009/2010 cropping season, Bikita

Crop	Obs	Average amount of seed (kg) usually used	Std. Dev.	Average amount of seed required for 2009/10 cropping season	Std. Dev.
Maize	40	22.5	13.3	22.8	14.5
Cow pea	40	0.5	2.4	0.5	1.8
Gnut	40	9.8	9.4	9.2	9.8
Finger millet	40	3.4	5.7	3.5	6.2
Bambara nut	40	3.35	6.6	3.35	6.7
Sorghum	40	1.25	3.3	1.25	3.3

Quantities of seed usually used for all crops are more or less the same as the seed quantities planned for use in 2009/10 season. Seed rate is directly related to areas planted; hence a higher seed rate would require a larger area. The little variation in seed rate is probably due to the fact that it is difficult to increase areas cultivated. The source of variation could be in area reduction.

Table 60. Farmers' planned seed sources for 2009/2010 cropping seasons, Bikita sample

	Percent of seed expected from the source by farmers		
Source	**Maize**	**Groundnut**	**Finger millet**
Retained	19.23	49.18	73.40
Local shop/vendor	29.67	9.56	0.00
Agro dealer	18.13	0.00	0.00
Contract growers	0.00	0.00	0.00
Irrigation scheme	0.00	0.00	0.00
Community based seed group	0.00	0.00	0.00
Gifts from relatives/friends	2.75	9.02	0.00
Barter/purchase from neighbors	12.64	28.69	26.60
Extension	2.75	0.00	0.00
Seed aid direct distribution	12.64	4.10	0.00
Seed voucher/fairs	0.00	0.00	0.00
Food aid	3.30	0.00	0.00
Urban markets	0.00	0.00	0.00
Total	101.10	100.55	100.00

Farmers plan to source maize, groundnut and finger millet seed mainly from traditional sources for the 2009/10 season and this is consistent with sources used for the same crops planted in 2008/09 season (Table 60). The high expectation to source maize seed from local shops / vendors implies a new anticipation that these sources will open and that the farmers will have cash to purchase the maize seed.

Community Overall Assessment of their Seed Security

The community's overall assessment of their seed security situation is given in Table 61.

Table 61: Community assessment of seed security and insecurity

Crop	Approximate number of households that grow the crop	Proportion of households who are seed secure next season (after harvest)	Comments
Finger millet	100%	100%	Seed is available in the area
Sorghum	80%	100%	Seed is available in the area
Groundnuts	100%	75%	Most farmers have groundnut seed. Those without perform casual work for others and are paid in seed (seed-for-work). Aphids decimated groundnut crop last season.
Pearl millet	3 farmers out of 40 grow the crop	100%	
Maize	100%	85%	Most without seed will do casual work for others or get from relatives.

Finger millet, groundnuts, maize and, to a large extent sorghum, are grown by most farmers in Bikita. Farmers are seed secure in the small grains – finger millet, sorghum and pearl millet. Up to one quarter of the farmers are not seed secure in groundnuts and maize, but they indicated that they will secure seeds for planting through purchase, seed swaps, casual work and gifts.

Key informant insights

The key informants interviewed were the AGRITEX District Agricultural Extension Officer, the Crops Specialist and the Livestock Specialist of Bikita District. Information of Bikita in general, the past three seasons, crop performance, inputs availability, accessibility and preparations ante-season were corroborated during community discussions.

Imposed blanket price controls by the GOZ without due consideration for production costs negatively affected agriculture – most inputs were in short supply and / or expensive on the parallel market and some outlets closed shop. The combined effect of price controls, low seed production by seed houses and a poorly performing economy culminated in poor agricultural production. A parallel market emerged where maize seed was sold for up to double the retail price and payment had to be in US$ – around US$40 - 50 for a 10 kg hybrid maize seed pack – which was beyond the reach of most farming households. The 2007/08 season had poor rainfall and agricultural production was very low – and the food gap was filled by food aid. The 2006/07 season was medium; rainfall was higher than normal in the first few months but was followed by a prolonged mid summer drought; agricultural production was modest. AGRITEX was minimally involved in the planning and management of Operation Maguta Program, which was implemented by the Zimbabwe National Army (ZNA).

Market Overview

The study team interviewed key informants in the formal business sector, agro-dealers in Masvingo, agro-dealers and agents who used to participate in seed distributions under the CARE program at Nyika Growth Point, and informal market traders at the Mucheke market in

Masvingo. The general feeling across all these sectors is that business in seed, fertilizer and other agricultural commodities is improving though purchasing power is very low because 'the US dollar is difficult to get' according to some farmers. Maize seed and fertilizers (compound D and ammonium nitrate) are available or in the process of being procured. The situation is highly dynamic and returning to normal with sales likely to increase, projected to reach a spike as the agricultural season (October / November) draws near. Finger millet, cowpeas and sugar beans are also available at the Mucheke market, and within communities in Bikita, and accessible according to informal traders and community discussions.

Agro-dealers

The formal market is apparently reviving and business at outlets visited--, Red Star, Farm and City, N. Richards, and Masvingo Farm Supplies-- seems to be growing after closure last year following price control raids. All key informants interviewed are in agreement that business had come to a halt last year, and business may fully recover if current trends continue.

All the outlets were beginning to stock maize seed and fertilizers. Red Star, who does central procurement in Harare, did not have maize seed and fertilizer but had made an order that could be arriving anytime. The impression given by Red Star was that there were no problems procuring seed and fertilizer as long as local management was convinced that the products could be sold.

Farm and City had maize seed in 10-kilogram packs and fertilizer available, both compound D and ammonium nitrate in 50-kilogram bags. Most buyers are purchasing one item at a time because of cash constraints. The outlet felt that most people could not afford the prices, hence sales were still low but would improve as the season drew near. N. Richards had 5-kilogram packs maize seed, from last year's stocks, available during the previous week and which had now been sold out. They were expecting another consignment of seed and felt that this too would be quickly sold out.

Masvingo Farm Supplies (MFS) had a compelling story of how agro-dealers were affected by the general economic environment, the price controls, bulk purchases of seed aid from seed houses for direct distribution and the plight of affected employees.

MFS used to have approximately 150 employees in 14 branches and principally dealt in maize seed sale:, at peak annual sales reaching 200 metric tons – which generated adequate revenue to see them through to the next season maize sales. As seed aid programs started taking root in Zimbabwe, maize sales significantly fell to such an extent that they had to diversify and increase other product areas – chemicals, fertilizers, hardware, and plumbing – in order to remain afloat and viable. Attempts to purchase seed last year from SeedCo, their main supplier, failed as apparently most seed had been bought out into one of the massive direct seed distribution programs. MFS's lifeline – maize seed sales – had effectively been taken away from them, and started a chain of events that led to closure of the business. The price control patrols that forced most outlets to trade at below economic levels finally forced MFS to retrench all the 150 employees and close down. As the key informant, the Accountant of MFS put it 'it was heartbreaking to see the end of livelihoods for all the 150 employees, their families and extended families. Their future was uncertain in an environment where most employers were closing their businesses'. MFS has reopened with renewed optimism for business in the new environment, but were apprehensive at the probability of another massive direct seed distribution (see Box 7).

Nyika Growth Point Agro-dealers

Business is slowly coming back to Nyika as most outlets are opening shop for the coming agricultural season. There was high optimism that if conditions remain the same, without price controls and patrols, then business would come back to normal again. The more than 5 general traders and agro-dealers visited at Nyika Growth Point had stocks of 10 kg packs of maize seed priced at US$25 – 30 each. They had purchased varying amounts of 10 to 20 such packs on a trial basis to see whether the product could sell fast – and farmers were buying maize seed at the rate of one bag each. The Masvingo Farmers Supplies outlet had just delivered 5 tons of Pioneer 32G53 10 kg packs, and 10 farmers had already bought part of the seed. More farmers were expected to buy seeds and fertilizer at the end of the month. Out of the 23 - 50kg bags of ammonium nitrate priced at US$38 per bag, only one bag had been bought; The 25 - 50kg bags of compound D fertilizer had still not been bought yet.

Two input dealers who participated in the CARE agro-dealer program in the past four years were visited (see also Box 8). CARE delivered maize seed and list of beneficiaries to the dealers, beneficiaries would approach the dealers and claim seed based on their vouchers and pay a handling and storage fee to the dealer. Another dealer visited used to procure seed and fertilizers from large dealers in Masvingo on credit, which was guaranteed by CARE in case of defaults. The Nyika dealer would then pay back for all items procured on terms until all the money owed was paid up. This CARE guarantee facility expanded trade activities of rural traders while service to farming families was assured. When the project ran out of funds in February this year, these graduated small agro-dealers who had been with CARE for more than 3 years are now approaching banks for loans. One agro-dealer visited had secured a personal business loan of US$1000 from Kingdom Bank, payable at 10 percent interest within 3 months. She is currently buying maize grain from farmers and cattle for her butchery business while operating the general dealer shop. She has managed to open another shop outlet for her son to operate at a nearby shopping center.

Prices

The price for maize seed ranges from US$22 – 30 for a 10kg pack, fertilizer prices range from US$ 32 – 39 for ammonium nitrate and compound D. The prices for seed and fertilizer appear on the high side when compared to prices 10 to 20 years back. There is an imbalance between the price of inputs and the price of maize grain (outputs).

Special Women's Issues

Women are predominantly the farmers in most households in Bikita and make significant contributions to household seed and food security. In previous years when the economy could employ men in urban centers, women played a crucial role in maintaining production – a role that continues to this day. The challenges have slightly shifted in the current dollar operated economy. The distinction of women's crops are somewhat blurred as crop profitability changes. Groundnuts are traditionally regarded as a woman's crop and proceeds from sales are for the purchase of kitchen items – which later revert to the woman's family in case and when she dies**.**

General Commentary

Generally areas planted to maize are decreasing but may have or will reach a threshold, as maize is the staple food crop in Zimbabwe. The small grains, finger millet, sorghum and pearl millet have taken up significant portions of the areas previously planted to maize (See Table 62), but a threshold in expansion of these crops will or might have been reached as well. Areas allocated to groundnuts appear to have fallen, probably due to the problems associated with storage of groundnut seed, but this may need further examination, especially as groundnuts are regarded as a woman's crop. Extension officers may have to look more closely at these trends over a longer period, discuss further with farmers and seek ways to enhance groundnut production.

Business for agro-dealers is returning to normal, farmers are purchasing maize seed and fertilizer and new stocks are expected in at the end of July-early August, when demand is expected to be at peak. Introducing direct seed aid at this point would certainly put a lot of the agro-dealers back out of business, as has happened in the last few years. Sustainable options for seed aid -- that may include, but not be limited to vouchers, seed fairs, direct cash disbursements – need to be implemented to maintain rural businesses and access to their service by farming families.

The current terms of trade for farming households are not within their manageable control – they tend to be 'price takers' for agricultural inputs and for sales of crop commodities. The economics of smallholder production, stress situations that farmers experienced, and coping strategies they employed for survival need to be closely studied.

Recommendations for Bikita Area

1. **Re-stimulate trader agent network in Bikita area**
   The trader agent network in Bikita and Masvingo in general is extensive, and benefited from training and capacity-building sessions that CARE implemented in the past. These networks need to be stimulated by channeling all trader products including seed and fertilizers through the agents. In the past, large commodity producers, including seed houses, were only allowed to sell their products through wholesalers who would only sell to retailers. NGOs could be supported to continue training and capacity building of trader agents – but with an added agenda to get a fair price for farmer's produce, as some agents are also buying farm produce, following inability of GMB to buy.

2. **Encourage current agro-dealers, based in Masvingo, to re-open branches in rural areas, bringing inputs closer to farmers**
   Some branches have already opened in out-reach areas like Bikita, but this is at a slow pace as agro-dealers are testing the market. Besides being encouraged to re-open branches, agro-dealers could also be encouraged to explore ways of becoming buyers of grain and other produce from farmers to stimulate competition for such products - which may lead to farmers getting a fair price for their produce. Farmers will not get a fair price until they are well organized; have basic business skills and access to market information so they can negotiate effectively.

3. **Provide assistance for farmer inputs through tried and tested and other viable alternative means that do not sideline agro-dealers but enhance their service to farmers.**
   Provide seed and other assistance through alternative means - e.g. seed fairs and voucher system, 'near money' and other forms of cash transfers – through established and new agro-dealers to stimulate trade and services to farmers. The voucher systems have to be tailored to suit local conditions. CARE and other NGOs working in Bikita and Masvingo have institutional knowledge of communities and conditions for best case systems for seed and other assistance.

4. **Promote local production and improvement of seed; Promote introduction of new varieties, including OPV maize.**
   The current local seed production system has proved its resilience during the aggravated stress seasons, and all farmers have planted a crop every year, despite alarmist calls that there is seed shortage. However, there is need to improve and enhance these seed production systems to levels where farmers could produce seed for sale. The Tsholotsho farmer field school model, started by AGRITEX, could be followed, especially for crops that are ignored by the seed houses. OPVs had a mixed start when introduced through the GMB seed aid schemes, but these should be introduced prudently.

5. **Introduce more pulses and improve the current production of pulses**
   Groundnut seed is difficult to secure for some families, though all families eventually plant the groundnuts. Introducing new groundnut varieties will improve options for farmers and may increase production. Special seed production training, related to groundnut, might also be of use. Cultivating cowpeas is on the increase, and new varieties could be introduced, evaluated by farmers and cultivated to improve the protein food sources. Perennial pulses like pigeon peas could be tried out on an experimental basis.

Seed System Security, July 2009: Tsholotsho District

Introduction

Tsholotsho district is located in western Zimbabwe. The district borders Botswana and lies in Agro-ecological region IV- a semi arid region that receives between 400 to 500 mm annual rainfall. The rainfall is characterized by mid season droughts that affect crop performance. The growing season in Tsholotsho is relatively short, averaging 90 days. Thirty year rainfall data shows that the district experiences severe crop failure once every 5-7 years

Predominant soils are the deep structure-less Kalahari sands with intrusions of black vertisols in some low lying areas. The sands are inherently poor with low organic matter and thus a low water holding capacity.

Like most districts in southern Zimbabwe, Tsholotsho is heavily affected by migration of the young (both male and female) to South Africa and Botswana to seek employment. Over 95% of households reported having one or more of their children working in South Africa. This has negative implications on labor needs for cropping, as only the elderly remain in many households.

The migration also means that remittances are very important to the communities in the district. According to the farmers who took part in SSSA group discussions, the children remit mostly groceries and cash. None in the sample remit agricultural inputs.

Agricultural Overview

Crops grown

Based on data provided by the AGRITEX district office, crops grown include sorghum, pearl millet, maize, groundnuts, cowpeas, Bambara nuts, sweet potato and finger millet. Pumpkins and melons also play an important role in the diet of the population. Pearl millet, sorghum and maize are the most important food crops while groundnuts and cowpeas are the most important legumes grown by the farmers in the district. The average land holding in the district is 5 hectares.

Types of varieties grown

Sampled households grow mostly modern varieties of sorghum, pearl millet and groundnuts. Table 63 below shows that, farmers grow more of OPVs in maize than hybrids though the difference is not great—and the sample size is modest.

Table 63: Type of the varieties planted by crop among the sampled households, 2008/09, Tsholotsho

Crop	Frequency	Types of varieties grown			
		Local	Modern	OPV	Hybrid
Maize	18	16.7	0.0	66.7	61.1
Cowpea	12	75.0	25.0	0.0	0.0
Groundnut	16	31.3	100.0	0.0	0.0
Bambara nut	3	100.0	0.0	0.0	0.0
Pearl millet	30	43.3	76.7	0.0	0.0
Sorghum	31	51.6	90.3	0.0	0.0

Farmer assessment of performance of varieties, 2008/09

Table 64 shows what farmers felt about the varieties that they are growing. Generally, all varieties grown by farmers were assessed as having been average to good, except for cowpeas, which farmers claimed was a wrongly labeled variety. However, in the 2009/10 season, the majority of farmers are generally going to re-plant all varieties of crops they have been growing.

Table 64. Farmers' assessment of performance of varieties planted in 2008/09 cropping season , Tsholotsho

crop	Number of responses	Percentage of farmers evaluating the variety performance			% of farmers that would re sow the crop variety planted in 2008/09
		Poor	Average	Good	
Maize	28	21	54	25	81
Cow peas*	13	46	31	23	77
Ground nut	29	14	34	52	97
Bambara nut	4		50	50	100
Pearl millet	36	19	42	39	86
Sorghum	44	27	27	45	86

Uses of crops grown

Table 65 below shows that, pearl millet and maize were rated high as food crops, while sorghum was rated low by the mixed (men and women) group. Sorghum and maize were ranked high as income crops. Groundnuts and cowpeas were ranked high both as food and income crops. However the women group ranked pearl millet as the most important food crop, followed by sorghum, maize, groundnuts, cowpeas and Bambara nuts in that order.
Pearl millet, sorghum, Bambara nuts groundnuts, water melons and sunflower were ranked high as income crops.

Table 65: Uses of crop grown as rated by community group, Tsholotsho

Crop	Use for food (High, Medium, Low)	Use for cash (High, Medium, Low)	Comments
Pearl millet	H	M	
Sorghum	L	H	Used for income only when sold as brewed beer.
Maize	H	L	Rarely sold
Groundnuts	H	H	Sold as butter. Also sold roasted and salted
Cowpeas	H	H	Partially cooked and dried leaves and grain are sold

Source: Farmers ward 12: 7/07/09

Farming system trends

The area under crops will fluctuate in different seasons for various reasons some of which are outlined below.

- Magnitude and quantities of aid in the district especially the GOZ's Inala/Maguta program.
- Quantities of fuel allocated to each district for tillage programs. In Tsholotsho for example 40 % of the households do not have cattle.
- The start of the season, rainfall distribution at the start of the season and the total rainfall received. An early start to the season usually results in increased area under crops. A dry season will see an increase in the area under small grains the following season at the expense of maize.
- Of late, labor shortage has tended to influence the area households can crop. They will plant what they can adequately manage especially weeding.

According to farmers in ward 12, the area under maize, sorghum and groundnuts has been steadily increasing. The introduction of seed aid by Government through Inala/Maguta except for the past two seasons and the SADC input program were cited as having been the main contributing factors to the increase in the area under maize, while the introduction of two early maturing varieties of sorghum (Macia, SV IV) and one new variety of groundnuts (Nyanda) have been responsible for the increase in the area under these crops. The ward enjoys good access to most inputs from government programs as it is near the district centre from where such inputs are distributed.

An increase in yields of most crops was also reported by the farmers to have been a result of training in crop production mainly in FFS programs that started in the district in the 2003/04 season.

A shortage of seed was also cited by farmers as having been responsible for the decrease in the area under Bambara nuts.

In terms of recent negative trends, the community cited a range of issues: he general loss of value of the Zimbabwe dollar due to inflation; political instability;, livestock death due to drought; increased HIV and AIDS infection; and , seed and fertilizer shortages. Positive trends included seed, goats, and food aid from various NGOS.

Varieties gaining and decreasing in area

New sorghum varieties that have been introduced in the community are Macia, SV II and SV IV. New pearl millet varieties are Okashana and PMV 3. These have gained much popularity within communities in and outside the district. IT 18 and CBC1 are the new varieties of that have gained entry into the community, while in maize, it has been PAN 413.

Late maturing and low yielding local pearl millet varieties such as Halale and isifumbata are gradually loosing popularity with the farmers. For sorghum the variety Tsheta is losing popularity with the farmers.

Access to new varieties by the community has been mainly through seed aid rather than through extension and research programs (55.3% and 34.8% of farmers receiving new varieties, respectively, through the two channels). This points to the fact that NGOs are better resourced than public development agents like Research and Extension. This is not a sustainable option; the reverse would be more preferable. The community revealed that they have been receiving seed aid every year in the past five years

Seed sources

Figure 14a and 4b trace the seed sources for pearl millet. Figure 14a shows current sources. Basically, the bulk of pearl millet comes from the local system –retained, accessed through gifts or purchased on the local market. Small quantities have come through the GMB. Most significant in Tsholotsho has been the importance of FFSs as a source of seed, as they supply farmers directly and also sell much of their pearl millet, sorghum, groundnuts and cowpeas through aid related seed fairs.

Figure 14a Seed sources- Pearl millet 2008/09, Tsholotsho

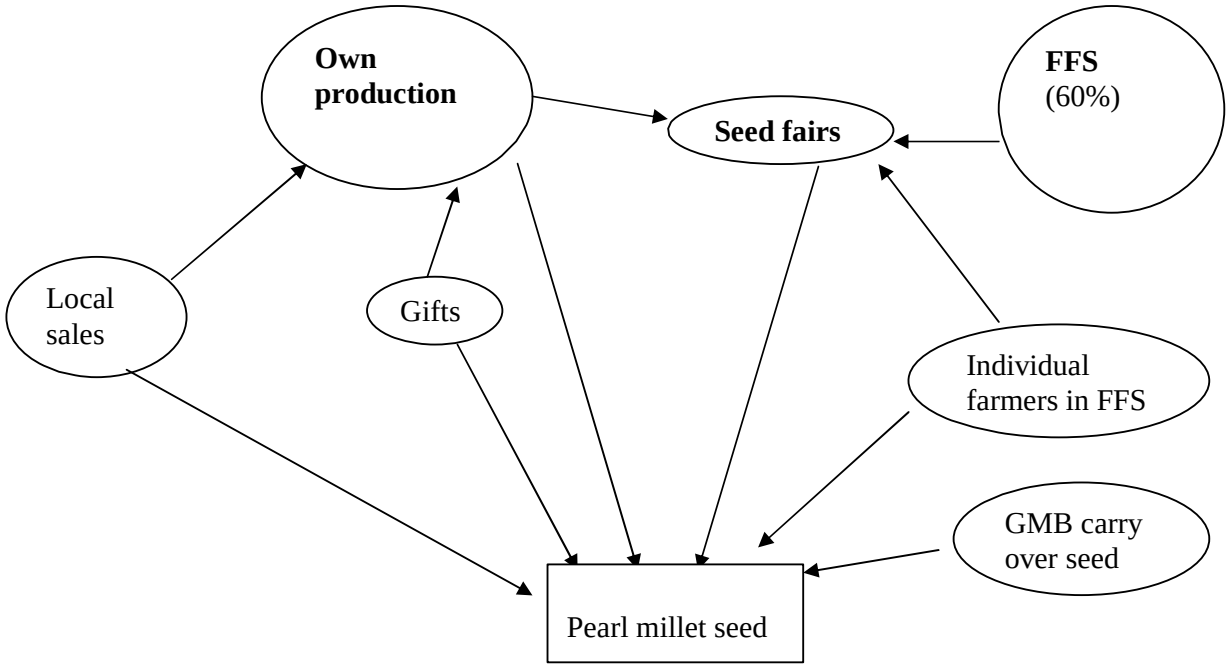
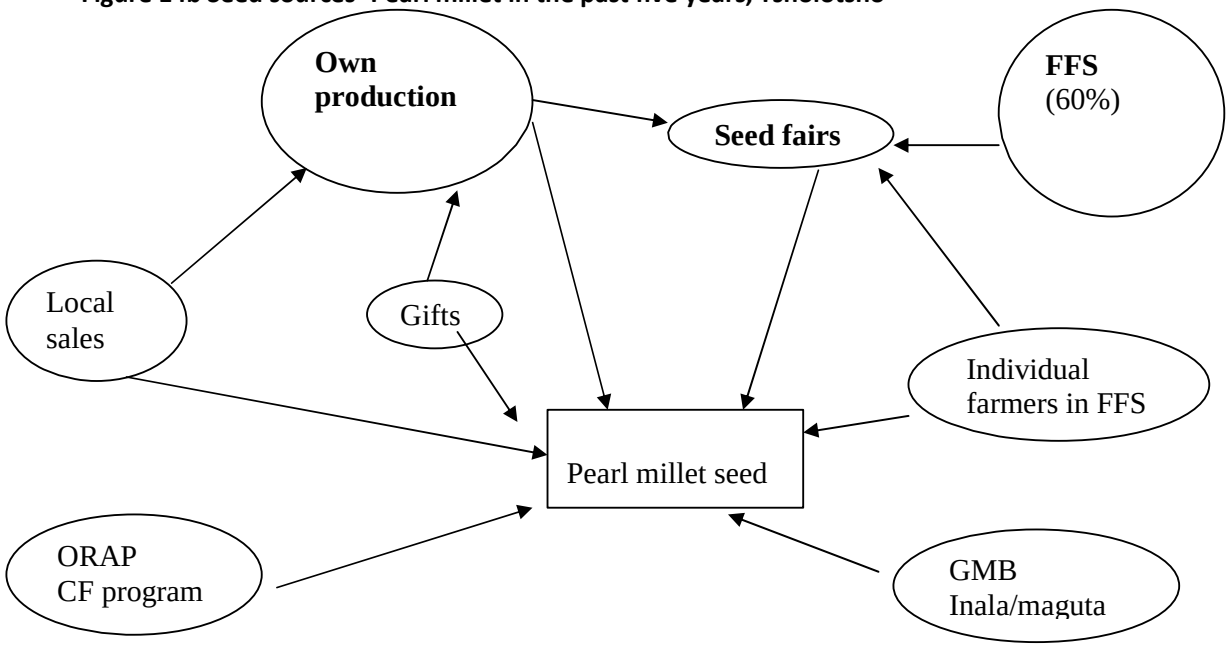


Figure 14b traces community assessment of pearl millet sources five years ago. The sources are basically the same, with the bulk of the seed coming from local production and small amounts coming from NGOs and government. This shows that the pearl millet seed system has been a stable one.

Figure 14b Seed sources- Pearl millet in the past five years, Tsholotsho



It is important to note that since the 2002/03 season, seed fairs organized by Plan International, COMMUTECHH and ORAP, where farmers use input vouchers, have been the

main channel of seed supplies for farmers in Tsholotsho district. Crops sold at the seed fairs have included pearl millet, sorghum, groundnuts, open pollinated maize, cowpeas and Bambara nuts. Sixty percent of the pearl millet and sorghum seed that exchanged hands at the seed fairs was produced by farmers in the FFSs. Sources for sorghum seed are virtually the same as those of pearl millet.

Figure 15a shows current sources of maize seed as described by the community.

Figure 15a Current sources of seed maize, Tsholotsho

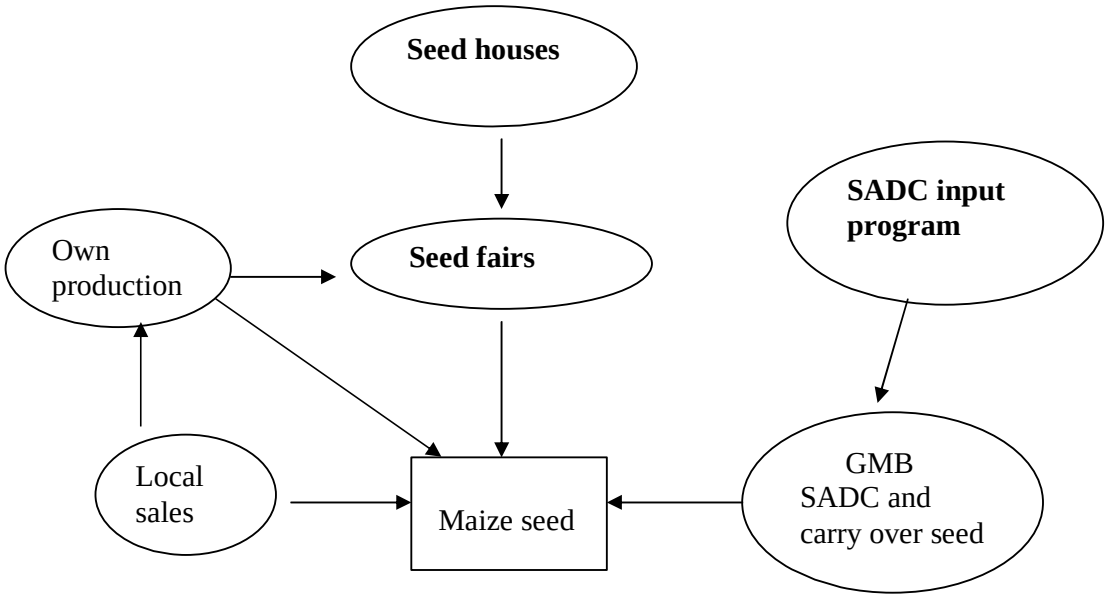
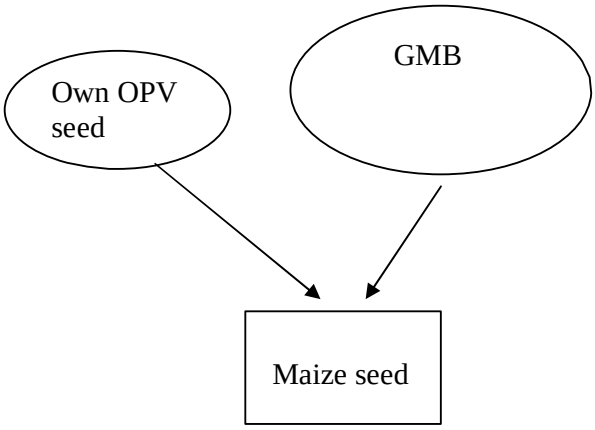


Figure 15b shows community assessment of maize seed sources five years ago. In both cases the bulk of maize seed came from external sources.

Figure 15b Sources of seed maize five years ago, Tsholotsho



In the past five to ten years, Plan International also provided seed to foster parents of the targeted children. COMMUTECH also provided seed maize (KEP, ZM 521, ZM 421) at one

time. On some occasions seed houses were invited to bring their seed at the seed fairs. These have been the source of hybrid maize sold at the seed fairs. Occasionally some farm implements have also been sold at these seed fairs. In the last ten years, agro dealers were also a source of hybrid maize.

Seed Sources 2008/09 Season

Table 66 below, shows that for all the crops grown in the community, own stock and social networks contributed most as seed sources during the 2008/09 season. This shows that farmers in this community are more self-reliant and rely less on seed aid. For maize, sorghum and pearl millet, seed/food aid a second source, though contributing 15% or less of the total seed planted. For groundnuts, seed markets were the second most important source, and a significant one. Development interventions also contributed seed, especially for groundnut and sorghum.

Table 66: Sources of seed and their contribution (in percentage) of seed planted in 2008/09 cropping season, Tsholotsho district

Sources	Percentage seed from the source				
	Maize	Ground nut	Cow peas	Pearl millet	Sorghum
Own stocks and social networks	**83.28**	**61.36**	**97.68**	**91.75**	**69.24**
Retained	46.71	41.67	39.81	55.93	37.05
Carry over	7.37	0.00	0.00	5.15	1.30
Gifts from social networks	29.20	19.69	57.87	30.67	30.89
Seed markets	**1.72**	**27.66**	**2.31**	**3.09**	**2.27**
Local shops/vendors	0.00	13.28	2.31	0.00	0.00
Agro-dealers	0.00	0.00	0.00	0.00	0.00
Barter trade	1.72	13.28	0.00	1.03	0.00
Casual labor	0.00	1.10	0.00	2.06	2.27
Contract growers	0.00	0.00	0.00	0.00	0.00
Irrigation scheme	0.00	0.00	0.00	0.00	0.00
Development interventions	**0.98**	**10.99**	**0.00**	**0.00**	**12.96**
Community tech	0.00	10.99	0.00	0.00	3.24
Extension/research	0.98	0.00	0.00	0.00	9.72
Seed/food aid	**14.02**	**0.00**	**0.00**	**5.15**	**15.54**
Seed aid direct distribution	9.59	0.00	0.00	0.00	15.54
Seed vouchers	2.46	0.00	0.00	5.15	0.00
Food aid	1.97	0.00	0.00	0.00	0.00

Planned Seed Sources 2009/10

For the 2009/10 cropping season, the most important sources for groundnuts, sorghum, and pearl millet seed will be retained stocks. For sorghum and pearl millet, this source will constitute over 50% of their seed requirement. For maize, farmers are counting mainly of their own stocks and buying from seed markets. They expect the 2009/10 contribution of aid to be about 12% for maize seed, so on expecting only modest help . They anticipate aid will

be insignificant for groundnuts, sorghum and pearl millet seed. For groundnuts, seed markets will be the second most important seed source (Table 67).

Table 67. Farmers' planned seed sources for 2009/2010 cropping season, Tsholotsho district

	Percent of seed expected from the source by farmers			
Source	**Maize**	**Groundnuts**	**Sorghum**	**Pearl millet**
Own stocks/social networks	**33.37**	**42.72**	**61.74**	**59.88**
Retained	25.14	42.72	53.04	53.1
Gifts from social networks	8.23	0.00	8.70	6.78
Seed markets	**39.87**	**32.4**	**30.23**	**16.44**
local shops	15.17	12.02	6.09	0.00
agro dealers	18.42	3.76	1.96	0.00
contract growers	0.00	0.00	0.00	0.00
irrigation scheme	0.00	0.00	0.00	0.00
barter/purchase with friends	3.14	13.24	20.22	13.22
Casual labor	3.14	3.38	1.96	3.22
Development interventions	**18.42**	**5.45**	**0.00**	**17.97**
community groups	0.00	0.00	0.00	6.78
Extension	18.42	5.45	0.00	11.19
Seed /food aid	**12.46**	**7.89**	**2.17**	**3.39**
seed aid direct distribution	7.58	3.76	0.00	0.00
seed vouchers	0.98	4.13	2.17	3.39
food aid	3.90	0.00	0.00	0.00

Community Overall Assessment of Their Seed Security

According to farmers in ward 12, all farmers are seed secure in pearl millet and sorghum. Table 68 below also shows that 100% of the farmers feel that they can be seed secure in maize. Access is the major issue with farmers growing hybrids.

Table 68: Community overall seed security assessment, Tsholotsho

Crop	Proportion of farmers who are seed secure next season	Remarks
Pearl millet	100 %	
Sorghum	100 %	
Groundnuts	75 %	Community indicates that they have enough seed to satisfy demand. Those who have do not want to sell yet – waiting for prices to firm. Lack of cash remains a problem for farmers willing to buy
Maize	100 %	For hybrids, community indicates willingness to buy.

Farmer Field Schools

In Tsholotsho, Farmer Field Schools (FFS) have a special importance in stabilizing seed systems. FFSs started in the 2003/04 season, with farmers learning about integrated soil nutrient and water management technologies. On realization that seed security was a

problem for most farmers in the district, the FFS program then included seed multiplication in the FFS curriculum.

Starting in 2003, seed production has been substantial in each of the six years (Table 69). Even in 2005/06, a drought year, the FFSs performed remarkably, producing enough pearl millet seed to plant 3500 ha.

Table 69: Seed production by FFS

Year	Number of FFS	Crop	Variety	Seed produced by FFSs (t)	Seed produced by FFS members (t)	Total (t)
2003/04	6	Pearl millet	PMV 3	4.5	10	14.5
		Ground nut	Nyanda	3.2	7	10.9
		Sorghum	Macia	6.8	10.8	17.6
		Cowpeas	IT 18	0.9	3	3.9
2004/05	6	Pearl millet	PMV 3	6.1	17	23.1
		Ground nut	Nyanda	2.8	6.9	7.7
		Sorghum	Macia	8	11	19
		Cowpeas	IT 18	1.1	2.1	3.2
2005/06	6	Pearl millet	PMV 3	3.6	14	17.6
		Ground nut	Nyanda	2.8	4.8	7.6
		Sorghum	Macia	4	16	20
		Cowpeas	IT 18	1.1	1.9	3
2006/07	13	Pearl millet	Okashana	7.1	19	26.1
		Ground nut	Nyanda	6.5	3.9	10.4
		Sorghum	Macia	10.5	18.8	29.3
		Cowpeas	IT 18	2	1	3
2007/08	26	Pearl millet	Okashana	5.2	17	22.2
		Ground nut	Nyanda	1.5	8.5	10
		Sorghum	Macia	4	20	24
		Cowpeas	IT 18	0.8	2	2.8
2008/09	46	Pearl millet	Okashana	14	70	84
		Ground nut	Nyanda	7	21	28
		Sorghum	Macia	18	17	35
		Cowpeas	IT 18	4	4	8

Source: AGRITEX- Tsholotsho district office

For the last season, 2008/09, the scale of FFS seed production has been particularly remarkable. Forty- six FFSs and individual farmers in the FFSs produced 84 tons of Okashana (enough to plant 16 800 ha of pearl millet), 28 tons Nyanda/Akwa (groundnuts), 35 tons Macia (sorghum), 8 tons IT 18 (cowpeas). Another FFS, Khulumausenza produced 0.5 t of CBC1- a new cowpea variety that is currently being purchased by Agri-seed.

ICRISAT, particularly SMIP, worked hard with AGRITEX in the introduction and promotion of new varieties of pearl millet and sorghum, during on farm trials and later using FFSs. Other NGOS such as COMMUTECH, Plan International, ORAP and CRS continued this work in the community working mainly with FFSs.

FFS members are now content with their production potential, but are rather concerned with finding marketing outlets for their produce. The entire groundnut crop is sold within the district. Discussions with one FFS suggested that ¼ of their seed is sold within the community and ¾ goes outside, purchased, among others, by seed houses and at one time the Grain Marketing Board. Agri-seeds, a seed house has already started buying pearl millet and cowpeas.

Seed Management by Seed Producers

Farmers in Farmer Field Schools have novel ways of managing their seed. For sorghum and pearl millet the farmers use isolations in either distance or time of planting to ensure purity of their seed. In terms of distance, the sorghum or pearl millet crop meant for seed is planted at least 300 m away from any other crop of the same family. When time of planting, also called staggered planting, is used, the crop meant for seed is planted in such a way that it does not flower when any crop of the same family nearby is in flower. For groundnuts, FFS farmers use distance and a barrier crop. Use of a barrier crop is when another crop, for example sorghum, is planted between two varieties of groundnuts.

For Pearl millet and sorghum, rouging of off- types is done up to harvesting. Some seed production groups select panicles meant for seed before harvesting: these are kept and threshed separately. Most farmers use very fine wood ash to deter insect pests from damaging the seed. Groundnuts are kept unshelled until needed either for sale or planting.

Seed Market Overview

Formal Markets

Formal markets used to operate at the district center, in the form of agro-dealers and shops that sold seed eight to ten years ago. The bulk of these sold hybrid maize. The price of the seed in these outlets was also very high. With the increased frequency of government input programs and seed aid, these were gradually pushed out of the seed business.

Some farmers from the district also purchase their inputs from Bulawayo, some 112 km away. In Bulawayo, three out of nine major agro-dealers visited (Bulawayo Seed Centre, Farm and City and Meikles Hard Ware) had hybrid maize seed already in stock, in July 2009.

ORAP. This agro dealer is in the process of winding up operations and converting the agro-dealer shop into a food shop. It cited viability problems as the reason for converting. The agro-dealer normal distributes 60-90 tons of hybrid seed maize. They used to access seed from Pannar, Pioneer and Seedco, the largest seed houses. Last season (2008/9), it was difficult to access seed and they distributed only 30 tons. Most of the seed produced by seed houses was reportedly bought by the government. ORAP has worked with ENDA Zimbabwe and ICRISAT to multiply pearl millet seed (PMV1 – 3) and groundnuts (Natal Common) at their

farm in Figtree. They also sell groundnuts and Bambara nuts on behalf of small holder farmers. Currently, they have in stock 7 tons of groundnuts and 3 tons of Bambara nuts for farmers in Nkayi District. They did not have any maize seed in stock at the time of the assessment.

National Tested Seeds. The seed house used to sell seed from Pannar, Seedco and Pioneer. The issue of cash upfront consignment is posing problems to the seed house. At present, NTS has in stock 2 tons of compound D and 3 tons of Ammonium Nitrate. A 10Kg bag of compound D and Ammonium Nitrate sells for US$8.50. The last five years have been the most difficult, mainly due to currency devaluations and price controls which saw the company operating at a loss. June 2009 has been their first month to break even. Their major clients have been rural farmers, whom they feel have limited access to cash for input purchases at the moment.

Mica Hardware. They are general a departmental shop of the Thomas Meikles group of companies, focusing mainly on hardware, but who also sell hybrid maize seed from seed houses, vegetable seed and fertilizer. Last year, they said it was difficult to access both seed and fertilizer. Actually they last sold fertilizer three years ago, yet they normally sold 30-60 tons per season before that. Currently they have received 2 tons of seed maize (SC513) from Harare and are selling this at US$25/10Kg.

Farm and City: The agro-dealer has the following in stock;

- 10 x 20 000 kernel packs of hybrid maize
- 40x50 000 kernel packs hybrid maize
- 10 tons Pannar maize seed
- 20 tons compound D
- They also have sugar beans in 500g packs, which can be potential seed.

They are currently trying to get more maize and sorghum seed from SeedCo.

C. Gauche: A hardware shop that also sells grain, some of which can be potential seed. Currently, they have cowpeas, Bambara nuts, soybeans, sugar beans, shelled groundnuts, wheat, sorghum, sunflower and pearl millet. Customers buy the above products for food, chicken feed and seed. They indicated no shortage of product supply. Produce is brought by farmers from rural areas. Potential seed is not cleaned or graded and is sold from 50 liter open bins.

Bulawayo Seed Centre: The owner is an agent of SeedCo, Pioneer, Pannar, Windmill and Zimbabwe Fertilizer Company. The first three sell seed, while the other two sell fertilizers. The agro-dealer currently received 30 tons of hybrid seed from each of the three seed houses, totaling 90 tons. Sales of both seed and fertilizer have been good, so far. The proprietor thinks giving out free seed is a challenge to the business and suggested that all farmers should be asked to pay at least part of the price of the seed they receive, so that they value it and become accustomed to buying.

Other important agro-dealers include Red Star, Jaggers and Fortwell, strategically situated at the main bus terminus where rural buses drop and load farmers. They haven't sold seed for the past 5-6 years due to government policy controlling sale of seed. Fortwell is currently selling ox-drawn plows at a fast rate, evidence that farmers are investing in agriculture. The three agro-dealers did not even know that government input programs had since stopped. They were going to request their head offices in Harare to order seed for their shops.

Informal markets

Local seed fairs are the main seed outlet for both FFS and individual farmers producing seed. Seed houses have also been a major seed outlet for pearl millet, sorghum and cow pea seed. In fact, Agri-seed had already bought twenty –two tons of pearl millet from the 2008/09 harvest. Farmers were however not happy with the $0.40/kg being offered as they felt that was the price for grain and yet they were selling seed.

The other important informal market for Tsholotsho farmers is in Bulawayo at the main rural bus terminus. The market sells both grain and potential seed of pearl millet, sorghum, groundnuts, Bambara nuts, sugar beans and cow peas. Some of the grain and potential seed sold in this market is from outside Matabeleland North province. Some sellers grade their grain when they see it as potential seed.

Prices of most potential seed crops double in September to October mainly due to increased farmer demand and diminished volumes. Towards the planting season, farmers will be holding fewer stocks compared to immediately after harvesting--- and yet it is the time that farmers will be looking for seed to plant: thus, there is an increase in demand.

Prices

Informal markets

Prices in the community and seed fairs vary according to the time of the year, as determined by supply and demand. Soon after harvest prices are low and they then go up towards seed fairs and planting time. A few farmers had started selling seed to other farmers and to a seed company- Agri –seeds as of the July assessment period. Sorghum and pearl millet are selling for $0.40/kg and cow pea is being traded at $1.09/kg. The price of groundnuts is yet to be decided as farmers are not sure about pricing using the new currencies –US$ and ZAR (Rand). Prices of most crops generally double towards the planting season. Farmers, for example estimate that cowpeas will likely sell for $0.80/kg towards planting time. Table 70 shows prices that were obtained at the Bulawayo market at the time of assessment.

Table 70: Commodity prices at the informal market, Bulaweyo, July 2009

Crop	Pack size (1 kg)	Price (US$)
Pearl millet	1	$0.20
Sorghum	1	$0.20
Groundnuts	1	$0.80
Cow peas	1	$0.40
Bambara nuts	1	$0.40
Sugar beans	1	$0.80
Finger millet	1	$2.00

Formal markets: Table 71 below shows prices of fertilizers and seed in the Bulawayo formal markets .

Table 71: Commodity prices on the formal market, Bulaweyo, July 2009

Item	Company	Pack size	Price (US$)
Seed maize	Pioneer	20 000 kernels 10 kg)	25
	Seed Co	25 kg	50
		10 kg	20
		5 kg	10
Compound D	Windmill	50 kg	39
	Windmill and ZFC	50 kg	35
Ammonium Nitrate	Windmill and ZFC	50 kg	35-38

Sources: Bulawayo Seed centre and Farm and City

Special women's issues

The majority of farmers in the ward are women. This is mainly due to migration of the men to South Africa and Botswana in search of employment. Participants estimated that 50% of the households in the wards are female- headed, composed of mothers who never married, widowed, divorced, deserted or women whose husbands are working outside the country. Female farmers are not in their own right allocated land for farming by traditional leaders. Divorced or widowed women who return to their original homes are either allocated land by their families or work family fields. Unmarried mothers may use land allocated to their sons, but they are a source of discord in the community as they are often considered snatchers of married men.

Women's crops

Generally such crops as groundnuts, cowpeas, Bambara nuts, sweet potatoes, water melons, and pumpkins are considered women crops, although some couples do not distinguish crops by gender and have equal decision-making , access and control over all crops. Females generally have more decision making powers over 'women's crops'.

Conflict over choice of crops and land allocation to different crops is sometimes marked between couples where the wife only attends agricultural training sessions, including FFSs, and therefore has more knowledge in crop production. Some families also have separate granaries, because wives fear that their husbands may use their hard earned grain to support 'small houses' - illicit affairs.

General Commentary

General Seed security: Seed security, overall, has been assessed as good – both qualitatively by the community- and through quantitative questionnaires. Sorghum and pearl millet seed are abundant in the system. A good number of farmers use OPVs and have even recycled hybrids. In community discussions, farmers using hybrids have indicated they will buy seed this season.

Tsholotsho has been an unusual site for seed multiplication innovations. The scale and spread of seed multiplication is truly impressive. Partly because of farmer field schools, new varieties of sorghum, pearl millet, groundnuts and cowpeas have moved fairly quickly within the community. The presence of ICRISAT, SMIP, Plan International, COMMUTECH and ORAP in the district has also helped with variety introduction and dissemination particularly of pearl millet and sorghum.

Immediate seed concerns: There is a general concern about groundnuts seed security as the crop is difficult to multiply in terms of labor and yield levels. Also, the greatest concern of farmer seed producers is in marketing of their seed and developing market outlets—a strategy which they prefer in preference to receiving seed aid from outside. In fact, farmers prefer the reverse to outside aid--- they have asked that outsiders come to buy seed from the community in Tsholotsho.

Recommendations: Tsholotsho

1. **Build capacity of farmer seed producers particularly to market seed**
   Farmers have made seed security possible in the district by multiply seed of important crops (sorghum, pearl millet, groundnuts and cowpeas) and in impressive quantities. These farmers have limited experience interfacing with big seed companies and lack general marketing skills. There is need to capacitate the farmers in these areas.

2. **Limit direct seed aid**
   In order to protect, stabilize and enhance the seed multiplication efforts in the district there will be need to limit seed aid especially of those crops in which the district is seed secure.

3. **Support, do not undermine agro-dealers**
   Agro-dealers play a crucial and sustainable role in affording farmers access to preferred inputs, on time and in appropriate packages. They need to be encouraged to get back into the input business. Seed vouchers through agro-dealers or availing loan facilities to them should be considered.

4. **Expand Farmer Field Schools**
   Farmer field schools have played a crucial role in improving crop production, and particularly the introduction of new varieties of pearl millet, sorghum, groundnuts and cowpeas. The role of field schools in seed multiplication by farmers in Tsholotsho has no parallel anywhere in the country. Farmer field schools need to be linked directly to new variety innovations. Channels accessing new varieties might be formalized.

5. **Scale up production of foundation seed**
   Production of foundation seed of non-maize crops needs to be scaled up, particularly for sorghum, pearl millet and groundnuts.

6. **Promote open pollinated varieties (OPVs)**
   Open pollinated varieties should be promoted to ensure seed security. This is key, especially in very marginal areas, and when targeting vulnerable groups.

Seed System Security, July 2009: Beitbridge District

Introduction

Beitbridge district lies in Agro-ecological region V- a semi arid region that receives between 300 and 400 mm rainfall per annum. The rainfall is characterized by mid season dry spells and droughts that severely affect crop performance. Generally, the cropping season runs from October to April, but the growing season- period, when rainfall is enough for normal physiological functions of crops, is less than 90 days.

Beitbridge is a border district. Both rural and urban livelihoods are to some extent influenced by its proximity to a vibrant South African economy. The district is thus heavily affected by migration of the younger generation in search of employment in South Africa. This has affected crop production as labor becomes scarce.

Agricultural overview

Crops grown

Based on crop data provided by the AGRITEX district office for the past six seasons (2003/04 to 20008/09), sorghum had the highest area dedicated to it followed by pearl millet. From the 2005/06 season maize overtook pearl millet to become the second most important crop to sorghum. Ironically maize has been written off on four out of the six seasons (with very low production results). Government input programs could be responsible for the increase in the area under maize.

Other crops grown include groundnuts, cowpeas cotton and, in the past two seasons, Bambara nuts. Yield data provided by AGRITEX shows that all crops grown in the district are very sensitive to low rainfall and mid season dry spells. This is more pronounced in maize and cowpeas which have failed in four and two seasons respectively, in the last six years. This might also mean that the varieties grown are not adapted to the prevailing conditions in the district.

Types of varieties grown

Sampled households grow mostly maize hybrids. Local varieties are planted by 29.6% of households. For cowpeas, groundnuts, sorghum and pearl millet, local varieties top the list of the types of varieties grown (Table 72).

Table 72 Type of the varieties planted by crop among the sampled households in Beitbridge

		type of varieties grown			
Crop	**Frequency**	Local	Modern	OPV	Hybrid
Maize	27	29.6	3.7	14.8	51.9
Cowpea	12	91.7	8.3	-	-
Groundnut	24	91.7	8.3	-	-
Pearl millet	25	84.0	16.0	-	-
sorghum	29	65.5	34.5	-	-

Farmer assessment of performance of varieties, 2008/09

Table 73 below shows that farmers are happy with most varieties that they are growing. Generally, all varieties grown were assessed by farmers as having been average to good, except for cowpeas, which farmers claimed was a wrongly labeled variety. In the 2009/10 season, the majority of farmers are going to re-plant most of the varieties of crops they have been growing.

Table 73. Farmers' assessment of performance of varieties planted in 2008/09 cropping season, Beitbridge

Crop	Percentage of farmers evaluating the variety performance			% of farmers that would re sow the crop variety planted in 2008/09
	Poor	Average	Good	
Maize	37.0	37.0	25.9	74.1
cow pea	8.3	8.3	83.3	100.0
Gnut	6.9	48.3	44.8	100.0
pearl millet	4.0	48.0	48.0	84.0
Sorghum	6.9	31.0	62.1	93.1

Uses of crops grown

Sorghum, an important food crop, is also considered a cash crop when used to brew traditional beer. Table74 below shows major uses of the crops grown by farmers in ward 10.

Table 74: Uses of crop grown, Beitbridge

Crop	Use for food (High, Medium, Low)	Use for cash (High, Medium, Low)	Comments
Pearl millet	H	L	Used for income only when sold as brewed beer.
Sorghum	H	M	Used for income only when sold as brewed beer.
Maize	H	L	Rarely sold
Groundnuts	H	L	Used as peanut butter and relish

Source: Farmers ward 10: 13/07/09

The women, unlike the mixed group, put maize in the medium category as a food crop and it is one crop that would not be planted under stress conditions.

Farming system trends

Crop trends

The six year crop data provided by AGRITEX depicts a general decline in the area dedicated to maize and pearl millet, except for the 2008/9 season when all crops registered phenomenal

area increases --due to an early start to the season, good rainfall distribution and a longer than normal rainy season. In contrast, there is a definite increase in the area under groundnuts. The area under cowpeas also shows an upward trend (Table 75).

Table 75: Cropping trends, Beitbridge district

Crop	Maize		Sorghum		Pearl millet		Groundnuts		Cowpeas	
	Area (ha)	Yields (t/ha)	Area (ha)	Yields (t/ha)	Area (ha)	Yields (t/ha)	Area (ha)	Yields (t/ha)	Area (ha)	Yield (t/ha)
2003/04	4476	0.1	6787	0.8	6012	0.5	20	0.3	10	0.7
2004/05	1300	0.0	7100	0.06	5212	0.001	0	0	100	0.0
2005/06	2469	0.0	2350	0.1	1280	0.01	253	0.03	162	0.002
2006/07	3753	0.0	3871	0.1	2448	0.0	423	0.0	75	0.0
2007/08	1954	0.0	5446	0.03	1970	0.06	337	0.015	135	0.01
2008/09	4995	0.4	10414	0.38	4855	0.28	907	0.22	580	0.2

Source: AGRITEX Beitbridge district

Farmers in ward 10 put pearl millet as the most important in terms of area dedicated to it, followed by sorghum, then maize and groundnuts. Water melons, pumpkins and sweet potatoes were also included by the women's focus group as being important: such crops are important as they mature first and are eaten during the growing season.

There are several reasons advanced by AGRITEX for the fluctuation in the area planted to different crops in different years. In the 2003/04, season the increase in the area under maize was a result of a GOZ input assistance program following the 2003/04 drought. A total of 269 tones of seed maize were distributed to farmers in the district. The sudden drop in the area under maize the following season was attributed to the late start of the season. In 2008/09, the area under all crops significantly increased, due to good rains and improved seed availability from a carry over from Inala/Maguta, the Champion farmer program and the SADC input program. When rains are good - a rare phenomenon in Beitbridge- farmers just go on planting, even using grain bought from GMB for food.

According to farmers in ward 10, the area under pearl millet has increased while that of sorghum has decreased. They advance tolerance of pearl millet to *striga,* that has caused havoc to sorghum ,as the major reason. The area under maize which is used as a back up crop has remained unchanged.

Livestock trends

Data provided by the Department of Veterinary Services shows an upward trend for all classes of livestock, although in some cases numbers fluctuate depending on the time the statistics were taken. Ownership patterns of cattle and goats, the most important livestock classes in this very arid environment ,show that 43.5% have no cattle but have goats (Table 76). Livestock is the major source of income for farmers in this district.

Table 76: Cattle and goat ownership, Beitbridge district

Livestock holding category	Ownership (% of farmers)
0 cattle less than 8 goats	24.3
0 cattle more than 9 goats	19.2
1-2 cattle	12.3
3-7 cattle	24.2
More than 8 cattle	20.0

Source: ICRISAT. (2007) Goat production and marketing: Baseline information for Semi arid Zimbabwe, Matopo Research Station Bulawayo Zimbabwe

Other trends

Farmers noted improved yields in the 2000/01 and 2005/06 season as some of the positive trends in the last 5-10 years (Table 77). In terms of negative trends, there was a shortage of seed in the 2003/04 season when pearl millet and sorghum provided by World Vision in the 2002/03 season did not head.

Table 77. Positive and negative trends in the past five to ten years, community assessment, Betbridge sample

Positive	Negative
• High yields of all crops including maize in the 2000/01 and 2005/06 seasons owing to good rains. • Increased maize, sorghum and pearl millet seed aid in 2004/05	• Floods in the 2000/01 season • High cattle mortality due to drought in the 2002/03 season • Shortage of sorghum and pearl millet seed in the 2003/04 season owing to fodder seed varieties provided by WV the previous season • High incidences of crop damage by armored cricket • High bird populations damaging crops in the 2008/09 season • Increased infestations of *striga* affecting sorghum and pearl millet

Varieties gaining and decreasing in area

A new open pollinated maize variety called 'Mozambique' is gaining popularity in the community. A Pioneer maize variety whose name the farmers couldn't remember and Super dwarf, are varieties that are also gaining popularity in the community. Macia and SV II are sorghum varieties that have also made inroads into the community's seed system.

A late maturing and low yielding local sorghum variety, known as 'Ndende', is almost disappearing from the community's seed system.

Seed sources

The district as a whole received huge quantities of seed and fertilizer through the SADC Input Program that were distributed through the GMB network in the 2008/09 season. Unfortunately the seed came late in January and some of it could not be planted as distribution continued even well after the planting period. The district received the following inputs through this facility:

Maize	37.05 t
Sorghum	33.75 t
Groundnuts	33.38 t
Sugar beans	7.725 t
Cowpeas	1 t
Compound D	30.95 t
Omnia (top dressing)	10 t

Source: AGRITEX. June 2009. SADC inputs distribution status report

In ward 10, local seed systems were the most important sources from which farmers obtained their seed especially for pearl millet (figure 16a) and groundnuts seed in the 2008/09 season (Figure 16a). However in the last five seasons, World Vision provided seed of pearl millet (Figure 16b). Some farmers also bought their seed from a neighboring district.

The women's group remembered community seed multiplication efforts sponsored by World Vision in the 2006/ 07 season, which involved multiplication of sorghum (variety, Macia), maize (variety, Kalahari Early Pearl, KEP) and groundnuts (variety, Nyanda).

Figure 16a. Sources of pearl millet seed during the 2008/09 season, Beitbridge

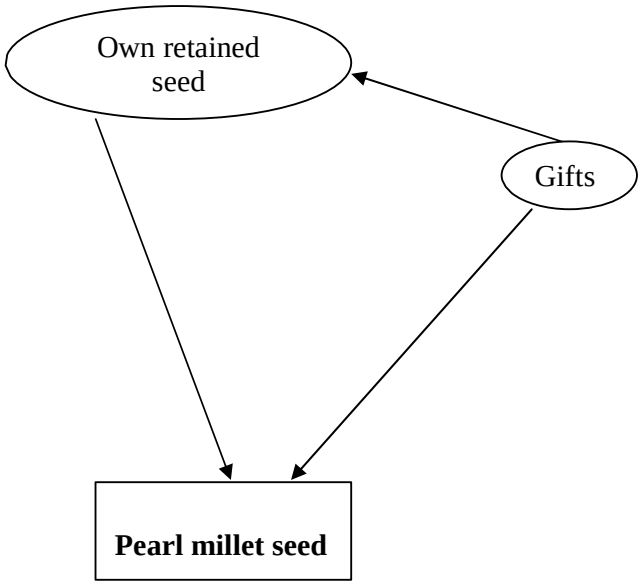
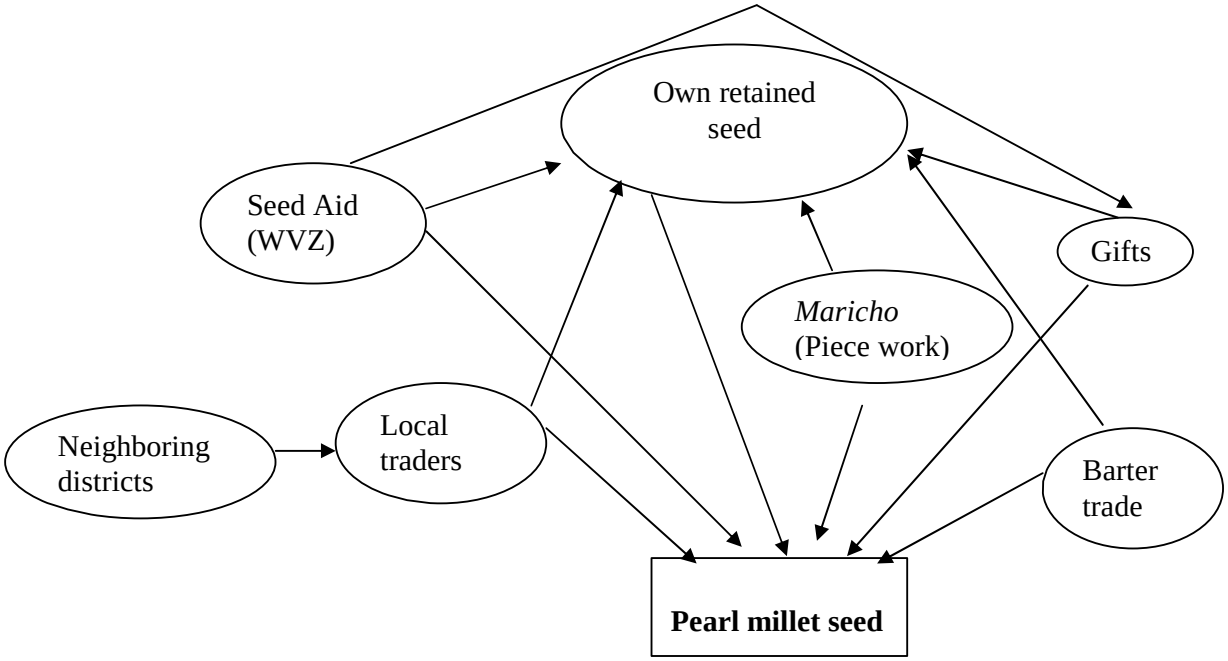
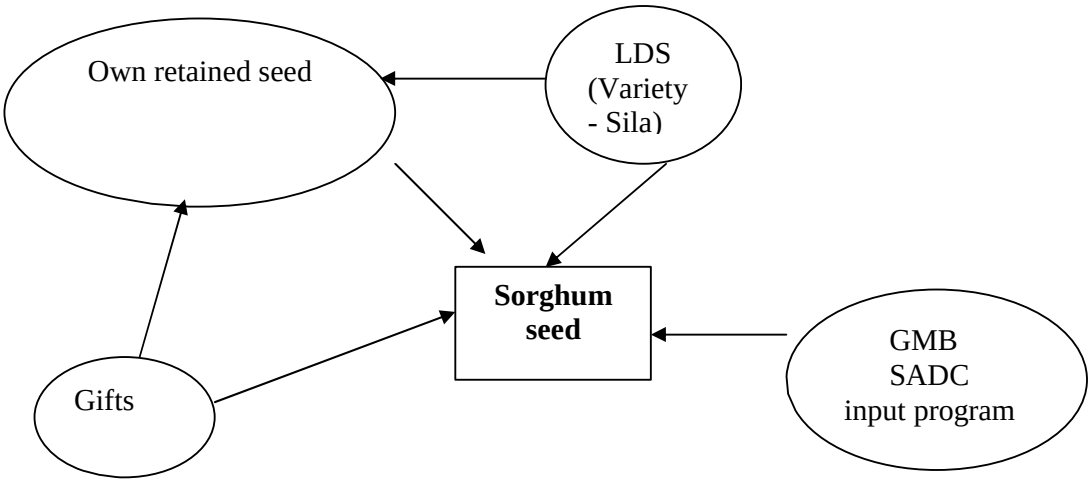


Figure 16b: Sources of pearl millet seed 5 years ago, Beitbridge



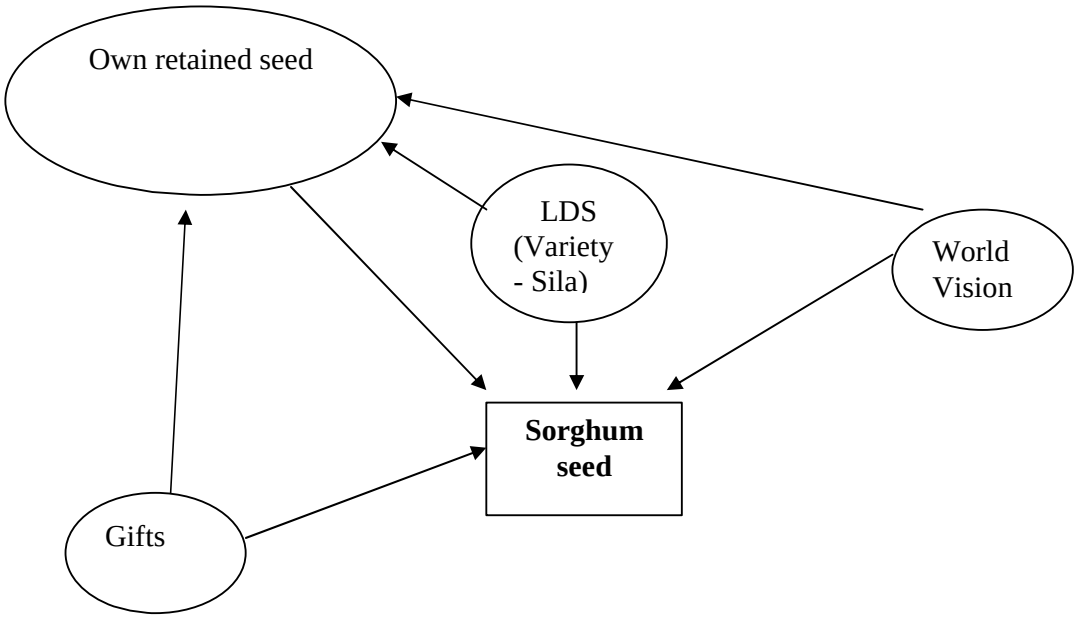
Besides using their own retained sorghum seed, farmers also used seed aid from the Lutheran Development Services (LDS) and government programs in the 2008/09 season.
.

Figure 17a: Sorghum seed sources in the 2008/09 season



In the past 5 years, World Vision also provided sorghum seed aid. The local sorghum seed system was then, and remains, still the most important source for sorghum seed (Figure 17b).

Figure 17b: Sorghum seed sources in the past five years



Groundnuts seed is the only commodity farmers do not give as gifts, but rather sell to each other. Farmers buy groundnuts at monthly cattle sales, at the Beitbridge informal markets and markets outside the district. Own retained seed and barter trade are the two other sources of groundnut seed. Groundnuts will also exchange with other commodities in the following ratios:

Groundnuts/Bambara	1:1
Groundnut/Cereals	1: 2
Groundnut/chicken	5 liters: 1 chicken
Groundnut to goat	50 kg: 1 goat

Groundnuts will be unshelled if exchanged with livestock.

For maize, seed houses, GOZ input programs and World Vision have been the main sources of seed in the past five seasons.

Seed sources 2008/09

Table 79, below, shows that in the 2008/09 season, own stocks and social networks were the most important seed sources for pearl millet and sorghum. This shows that farmers in this community are more self-reliant and rely less on seed aid for these two most important crops.

For maize and groundnuts, seed markets were the most important seed sources. Development interventions did not make any contributions as seed sources

Table 79: Sources of seed and their contribution (in percentage) of seed planted in 2008/09 cropping season, Beitbridge

Source	percentage seed from the source			
	Maize	Ground nut	pearl millet	Sorghum
Own stocks and social networks	**26.26**	**32.73**	**81.90**	**89.02**
Retained	16.39	21.47	51.64	74.73
Carry over	2.41	0.00	11.23	0.00
Gift from social networks	7.47	11.26	19.03	14.29
Seed markets	**67.7**	**67.27**	**10.30**	**0.00**
Local shops/vendors	19.76	64.94	7.18	0.00
Agro-dealers	27.71	0.00	3.12	0.00
Barter trade	6.02	2.32	0.00	0.00
Casual labor	8.43	0.00	0.00	0.00
Contract growers	0.00	0.00	0.00	0.00
Irrigation scheme	5.78	0.00	0.00	0.00
Development interventions	**0.00**	**0.00**	**0.00**	**0.00**
Community tech	0.00	0.00	0.00	0.00
Extension/research	0.00	0.00	0.00	0.00
Seed/food aid	**6.02**	**0.00**	**7.80**	**10.99**
Seed aid direct distribution	0.00	0.00	7.80	10.99
Seed vouchers	0.00	0.00	0.00	0.00
Food aid	6.02	0.00	0.00	0.00

Planned Seed Sources 2009/10

For the 2009/10 cropping season, the most important sources for groundnuts, sorghum, and pearl millet seed will be retained stocks and gifts from social networks, although seed markets are an equally important source for groundnuts (Table 80). For sorghum and pearl millet, this source will constitute over 75% of their seed requirements. For maize, the most important source will be seed markets. Farmers project that seed aid/food aid's contribution will be insignificant.

Table 80. Farmers' planned seed sources for 2009/2010 cropping season, Beitbridge

	Percent of seed expected from the source by farmers			
Source	**Maize**	**Groundnut**	**Pearl millet**	**Sorghum**
Retained and gifts from social networks	**24.96**	**47.96**	**78.49**	**85.36**
Retained	19.72	44.74	73.15	81.82
Gifts from social networks	5.24	3.22	6.34	3.54
Seed markets	**65.86**	**42.84**	**18.79**	**13.39**
local shops	26.58	23.83	14.09	10.86
agro dealers	22.03	7.31	0.00	2.53
contract growers	4.62	0.00	0.00	0.00
irrigation scheme	0.00	0.00	0.00	0.00
barter/purchase with friends	12.63	11.70	0.00	0.00
Urban markets	0.00	0.00	4.70	0.00
Development interventions	**0.00**	**0.00**	**0.00**	**0.00**
community groups	0.00	0.00	0.00	0.00
Extension	0.00	0.00	0.00	0.00
Seed/food aid	**11.56**	**2.92**	**0.00**	**1.26**
seed aid direct distribution	11.56	2.92	0.00	1.26
seed vouchers	0.00	0.00	0.00	0.00
food aid	0.00	0.00	0.00	0.00

Community Overall Assessment of their Seed Security

Table 81 below, shows that the sampled community in Beitbridge assessed itself as seed secure in all the major crops grown (pearl millet, sorghum, maize and groundnuts). However, farmers indicated that they need access new varieties, especially for the crops for which they retain seed--- and made a plea for research Institutions such as Matopo Research Institute to give provide them directly, or give them access to the varieties they require.

Table 81: Community overall seed security assessment, Beitbridge

Crop	Proportion of farmers who indicated that they will be seed secure next season	Remarks
Pearl millet	99-100 %	Normally keep own home saved seed
Sorghum	100 %	Home saved seed and from NGOs and government programs
Groundnuts	90 %	Own saved seed
Maize	100 %	Normally use external seed sources

Seed management by farmers

For all crops, farmers manage grain meant for seed (potential seed) differently from grain. Larger and un-diseased (smut free) heads of pearl millet and sorghum are selected soon after harvesting. They are then threshed and ashes of goat manure are mixed with the seed. The container in which the seed is stored is covered with thick mud and stored in most cases under the bed or in the granary. For maize, the two ends of the cobs are shelled off and the mid section separately shelled and stored in the same way for seed. Groundnuts are kept in shells until when needed for planting. Just before planting farmers select large unbroken seed that is free from diseases.

Seed Market Overview

Formal Markets

Red Star, Bambazonke and M and R wholesalers are the main agro-dealers that used to sell seed in the district.

Bambazonke: This wholesale shop buys its stock from South Africa and as far afield as Johannesburg. Besides their own retail shops, the wholesaler also supplies other retail shops. In the 2008/09 season they sold 5 tons of PAN 413, an early-to-medium hybrid maize variety. The agro-dealer bought seed at between R35.00 and R40.00/10 kg and sold it at R100 to start with and reduced the price to R50.00 towards the planting period as seed supplies improved in the district. Due to cash constraints, the wholesaler starts stocking seed in October to avoid tying cash to a commodity that might not sell quick enough-- if ordered too early. The wholesaler plans to order 30 tons of seed maize in the 2009/10 season.

Red Star: The wholesaler last stocked seed in the 2006/07 season. In that year it sold 2 tons of seed maize. A seed house, Pannar has made enquiries already and the wholesale will be making a decision as soon as Pannar gives them the prices.

M & R: In the 2008/09 season, the wholesaler sold 7tons of hybrid maize. They brought most of their seed from South Africa. They have never sold fertilizer. In the 2009/10 season, the wholesaler hopes to sell 7 tons of hybrid seed maize.

Informal markets

The major informal market is situated at Dulibadzimu rural bus terminus. Bambara nuts, cowpeas, pearl millet and groundnuts are the main crops sold on the market. The first three can be termed potential seed material while the groundnut is of very poor quality and not suitable for planting. The bulk of the grain comes from outside Beitbridge. Most of the Bambara nut crop is sold across the border in South Africa.

Prices

Informal markets

Prices at the Dulibadzimu market fluctuate according to supply and demand. Towards the planting season, when supply is low and demand is high, prices almost double or treble.

Table 82: Commodity prices at Dulibadzimu informal market

Crop	Price (US$/kg)
Pearl millet	0.33
Bambara nuts	0.55
Groundnuts	0.42
Cowpeas	0.35

Special women's issues

Women's crops are food security-linked and also empower them to access the petty cash they may require for household needs. Generally, such crops as groundnuts, cowpeas, Bambara nuts, water melons, pumpkins and sweet potatoes are classified women crops because: they are normally managed by women; they are used to address the girl child needs; they are considered minor crops and used for immediate food security and relish.

Other Key Informant Insights

AGRITEX: According to the DAEO, seed aid encourages a dependency syndrome in farmers. Wheat, for example, dropped from 300-400 ha per year to only 165 ha in the 2008/09 season because government did not provide free inputs. His office feels the best and most sustainable seed system is to revive the seed markets and to also hold seed fairs where even seed houses can bring their seed and sell to farmers. AGRITEX is in fact trying to organize the first seed fair in the district for the 2008/09 season.

Farmers in the border town also bought seed maize from South Africa, despite the fact that seed maize varieties sold in the nearest towns are long season and are grown under irrigation.

The office feels that the district is seed secure in pearl millet, sorghum and OPV maize seed.

Red Star: This agro-dealer felt that the advent of seed aid from Government and donors was responsible for the collapse of their seed business.

Other comments

'Beggers are not choosers' quipped one farmer during a discussion with the women's group in Beitbridge apparently referring to the quantity of seed a farmer receives from seed aid.

'Bring Matopo research station here in Beitbridge so that we farmers can have new drought tolerant varieties,' farmers remarked a group discussion meeting.

Recommendations: Beitbridge

1. **Promote an integrated crop production approach**
   Beitbridge is a very marginal district and crop production requires that modern crop production technologies be seriously considered. This calls for an integrated crop production strategy. Integrated soil nutrient and water management technologies should be promoted alongside a rigorous promotion of new modern varieties.

2. **Support community seed multiplication programs**
   Community seed multiplication of modern and new varieties of Pearl millet, sorghum, open pollinated maize and groundnuts should be promoted in the district. Irrigation schemes scattered across the district could be used, provided the farmers are prepared to pay a premium price for seed grown under irrigation.

3. **Revive Agro-dealers**
   In order to avoid a situation where farmers plant inappropriate varieties even in irrigation schemes, there is need to support local agro-dealers and shops to re-engage in the input business. Seed vouchers through agro-dealers or availing loan facilities to them should be considered.

4. **Limit direct seed aid distributions**
   In order to protect, stabilize and enhance efforts by agro-dealers to re-engage in the agricultural input business, there is need to limit direct seed aid and improve access to inputs by spreading agro-dealer shops far and wide.

5. **Capacitate extension staff**
   The apprenticeship training program of extension staff is abridged and produces semi qualified extension workers. The surveys which were conducted by AGRITEX field staff as enumerators confirmed this. There is therefore a need to put in place a program to resuscitate the once popular and efficient in-service training of extension workers in AGRITEX.

VIII: OVERALL RECOMMENDATIONS: ACROSS SITES

The opportunity for the SSSA team to conduct assessments across diverse and fairly representative regions has provided the field teams a useful perspective on seed security in Zimbabwe, more generally. While site-specific recommendations have been included in each site report (chapter VII), below, we put forward a set of recommendations which are applicable across all sites. These include recommendations related to seed security and emergency response, as well as recommendations specific to formal and informal seed sector strengthening and to the process of seed security assessment *per se*.

GENERAL RECOMMENDATIONS ON SEED SECURITY AND EMERGENCY RESPONSE

1. The seed security problems encountered in all assessment sites were not short-term ones.

   Recommendation: Any response in the short term should be linked to longer-term recovery and development, including exploring potential for agro-business support.

   In terms of strengthening seed systems, immediate emergency responses might be usefully designed to address any or all of the following:
   - Re-stimulate the agro-dealer sector, and encourage it to become more small farmer-oriented
   - Help farmer seed production groups market surplus seed stocks
   - Link farmers to already 'proven' variety innovations
   - Put special emphasis on 'problem crops'- maize and groundnuts

   (see specific recommendations below in sections on Formal Sector Seed and Informal Sector Seed, respectively)

2. Availability of seed *per se*, was not identified as the major problem in any of the assessed sites, including availability of maize seed. Agro-dealers and farmers were optimistic about the supplies currently available, as well as supplies potentially available through re-ordering stocks. Rather access to seed, in particular maize, was a compelling issue in all zones, due to : a) high prices of maize seed ; b) decreasing farmer purchasing power , partly associated with low compensation for produce sold; and c) scarcity of South Africa Rand (ZAR) or US$ currency notes in circulation. **Recommendation:** In this context, emergency 'seed-related' interventions might best be designed to inject money, including currency notes, into the local economies.

3. Repeated maize seed distributions (whether by government or NGO) are having negative effects. Among farmers, repeated distributions are altering their strategies for accessing seed. Farmers wait for free seed aid (as soon as upcoming distributions are announced via press or radio), instead of trying to access it themselves. Repeated deliveries are also undermining the sustainability of agro-dealer business. Hence, direct seed distribution (DSD) of maize is not a 'do-no-harm' response. **Recommendation:** The DSD practice might best be significantly curtailed in both the short-term and the longer-term.

4. The multiple, intensive SSSAs have shown that 'one size does not fit all'. The four sites assessed had different problems and challenges. A blanket response, such as giving free seed, with or without fertilizer, may not solve the problems immediately at hand and may not strengthen systems toward recovery and development. **Recommendation:** Interventions need to be tailored to specific seed security constraints.

5. The SSSA found little evidence for farmers' eating of seed in stress periods. Accounts suggest that farmers eat their seed only; a) If they can easily access desired seed again, as is the case for buying pulses on the open markets; or b) if they are alerted that government or NGO-provided seed is a guaranteed bet. **Recommendation:** The need for a "Seed Protection Ration" (SPR) might be critically reviewed.

Below, we make recommendations for the very short-term (now) and for the short to medium term (i.e. the next few seasons).

FORMAL SEED SECTOR STRENGTHENING DURING EMERGENCY AND EARLY RECOVERY

Agro-dealers are critical conducts through which farmers obtain maize seed, fertilizer and other specialized agricultural inputs. They can only serve small farmers if: a) they continue to exist, b) have supplies, c) are situated in some proximity to farming communities, and d) offer products at prices which farmers can afford. The Relief Seed Business is threatening to compromise attributes a and b, and incentives or subsidies have to be put in place to address issues c and d.

Very short term

6. **Recommendation:** In the immediate months, all efforts must be made to sustain, not undermine, agro-dealer business during this tenuous financial period. A good number are just starting to re-open their doors, and it is a 'make or break' period for them.

<u>Specific recommendations linked to 6</u>

6.1 If emergency maize and/or fertilizer are to be given as part of relief programs such distributions should be done via a voucher system linking farmers to agro-dealers stores or to agro-dealers selling at seed fairs.

Such a move will help support business recovery, get farmers access to preferred varieties and inputs, and help to inject cash into the local economy.

6.2 Agro-dealers need to be encouraged to sell closer to farming communities, and growth center areas. Transport costs mean that rural farmers may pay 30-50% more for the same bag of seed sold in the bigger towns. In the short-term, aid organizations might consider adding a transport cost into any voucher program.

6.3 Agro-dealers linked to seed aid programs should be encouraged to package seed and fertilizer products in sizes farmers have potential to access. While the assessment team saw 1 kg packages of both (re-packed) we suggest seed sizes of 5 and 10 kg (with 2 kg on offer in small quantity) and fertilizer in 5 and 10 kg packs and upwards.

6.4 Efforts should be made (by donors? government? UN agencies?) to ensure that regional and local agro-dealers can receive adequate stocks to sell. This might be an issue of reorienting the overall supply away from bulk relief aid purchase. Mechanisms should also be explored for helping local dealers to receive stocks on consignment or through some credit guarantee arrangement.

Short to medium term

13. **Recommendation:** The 'normal' network of those selling certified maize seed, fertilizer, and other specified inputs needs to be expanded and brought closer to farming communities on a continued basis. Formal agro-dealers may not find it lucrative to set up shop in less populated and removed areas. Programs such as CARE's 'trader agents' in Masvingo have served in the past to broaden agro-supplier coverage. (Note: similar programs have unfolded in neighboring Zambia, The Profit Program) Recommendation: The traders agent networks, such as those supported by CARE, should re-vitalized and replicated so as to serve even those in more remote areas.

14. **As a general recommendation, across the board:**, Incentives need to be put in place to encourage agro dealers and trader agent suppliers to become more small farmer client oriented. Client-oriented means putting seed on offer early (July/August rather than October/November), offering farmers preferred crops varieties and fertilizers, packing in affordable sizes, and selling at points accessible to local farming populations.

INFORMAL SEED SECTOR STRENGTHENING DURING EMERGENCY AND EARLY RECOVERY

The informal seed sector provides the majority of Zimbabwe farmers' seed: small grains, pulses and tubers. (Important exceptions are seed of maize, wheat and horticultural crops). The informal sector needs to be strengthened so as to provide farmers easy access to improved varieties, deliver a good quality seed, and to professionalize the processes of seed production, marketing and rural agro-enterprise more generally. A healthier informal seed sector will translate into a much healthier rural economy.

Very short term

15. **Recommendation:** emergency support programs linking with the informal as well as formal sector should concentrate on alleviating seed access problems. Seed fairs with vouchers, vouchers linking farmers to agro-dealers (cited in point 7) and direct cash

transfers are all examples of possible aid options which might give farmers increased access to crops and varieties of their choice.

Specific recommendations linked to 9

9.1 In terms of seed-related issues, *seed voucher and fair operations might best be designed to respond to specific needs of farmers at this moment in time*. Access to groundnut seed, and seed of new, especially early maturing varieties, have been cited at various sites as key farmer-sought inputs. Seed fairs might make extra efforts to engage local and regional agro-dealer suppliers to put on offer modern varieties. Formal sector suppliers might require a transport premium to take part in these rural events.

9.2. Non-seed agricultural inputs also were cited at the forefront of farmer needs in the assessment: fertilizer, labor, draught power. Seed fairs might insure that both basal and top dressing fertilizer bags appear on offer in any fair event, and in farmer-friendly sizes. Use of vouchers to gain access to labor and draught power might also be explored.

9.3 Graduated vouchers might be usefully employed in the upcoming emergency programs. Basically, graduated vouchers give varied levels of aid and help to distinguish between the very poor, and those who need a bit of extra help in this time of financial and currency fluctuation. Graduated vouchers can help lessen dependencies, as only those near the bottom of the spectrum should receive substantial free support. Average income farmers (again, somewhat cash insecure) might receive vouchers to cover but parts of their agricultural needs.

9.4. Giving cash aid as direct assistance might seem unwise at this point in Zimbabwe, where the whole economy is severely cash-strapped. However, small cash trials could help farmers access their own priority needs, which may include agricultural inputs.

Short to medium term

There is a strong need and opportunity to professionalize and strengthen informal sector seed production.

16. Farmer groups (and individual entrepreneurs) require support to ensure good quality seed supplies of what are referred to as the non-commercial or orphan crops (basically everything but maize, wheat and horticultural crops). This support implies efforts on multiple thrusts, and needs to be done professionally, Seed production will not succeed unless it is tied to real demand and sustainable market development. **Recommendation:** Significant effort and funds should be allotted to increase informal seed production capacity and marketing channels.

Specific recommendations linked to 10

10.2 Local community groups need enhanced capacity in the techniques of seed production. Farmer Field School experience shows that better isolation distances, variety sorting, improved agronomic practices, improved storing

and storage techniques can lead to greater availability of good quality seed at the local level. Groundnut seed, in particular, requires enhanced local level capacities.

10.2 Farmer groups, whether for seed or food sale, should only be encouraged to produce crops if clear markets have been identified, and general agro-enterprise/ marketing skills enhanced. Market skill enhancement and market identification has to be the driving force shaping local production initiatives.

10.3 New, modern, farmer-acceptable, and market preferred crops and varieties have to feed on a continuing basis into local production systems, both to boost yields and enhance marketing possibilities. Across sites, only new maize varieties enter farming system with regularity—except when special aid of development programs bring in new cowpea or sweet potato or pearl millet types. Recommendation: Links have to be professionalized and sustained to promote variety innovation at the local level. Farmer Field Schools (FFS), Participatory Variety selection, new variety small packet sales might all help to raise awareness of and access to new needed varietal materials.

10.4 Production of foundation seed has to be intensified across of range of non-commercial crops, to form the base of an extensive, decentralized, seed production system. The production of such foundation seed should squarely rest with the national research institution `DR&SS. (This is not an appropriate or sustainable international agricultural center function).

In brief, we are recommending the development of a market driven local seed production model, which scales up foundation seed and then decentralizes seed production in scores of zones country- wide. Supply has to respond to demand, meaning that hard to produce crops (e.g. groundnut) and new desired varieties have to drive the production process.

11. Local markets are important for farmers' seed supply, particularly for the pulses. More attention should be given to encouraging that these open seed/grain markets supply the kinds of potential seed farmers need. As a point of departure, seed/grain traders could be powerful partners in helping to move *new modern varieties* widely, within and among farming communities. **Recommendation:** Strategies should be tested for directly linking formal sector seed supply with informal trader seed/grain sellers. Among the approaches that might be tested and evaluated are a) the distribution of variety samples (to stimulate demand); and b) the sale of small packets of modern varieties and improved seed at open market venues.

PROMOTING ACCURATE SEED SYSTEM SECURITY ASSESSMENTS

Classic seed need assessments inevitably conclude that 'seed is needed' and that the response should take the form of direct seed distribution. While innovative at their inception (as they distinguished seed aid need from food aid need), such assessments are now

outdated, inadequate and should be significantly modified, and urgently. Understanding of what happens to seed systems during disaster has become markedly more refined in the last five years and we have learned that *distinguishing among seed security constraints is key for recovery*. Further, analyses have shown that systems need to be analyzed to gear appropriate seed-related responses: seed systems, farming systems, markets and livelihood systems more generally.

Short to medium term

12. **Recommendation** : Seed security assessment methods have to be significantly revamped.

<u>Specific recommendations linked to 12.</u>

12.1 ` National and regional formats for assessing seed security status should shift from those which calculate simplistic 'seed needs' to frameworks which recognize different types of seed security problems, and which tailor responses accordingly. These problems might include diverse constraints of seed availability, seed access and seed quality, which are distinguished by their presence in the short and in the long term. The Crop and Food Assessments missions might be among the priority tools to be revised to contain a specific seed security component.

12.2 Seed security assessment capacity needs to be built at regional and local levels. Technical tools already exist to help NGO and government agricultural officials move forward on seed security assessments. An explicit technical process needs to be put in place to:

- raise awareness of seed security versus food security issues
- set up local level seed security indicators
- train local level staff (NGO and government) in seed security field assessments

12.3 Given the complexity of the stresses in Zimbabwe, "emergency' seed aid related work has to think strategically and longer-term. Assessments related to seed security, can and should incorporate more developmental elements, including Issues related to system stability, opening and strengthening of markets, and equity concerns.

This expanded focus suggests that the 'skill set of those assessing seed security' has to be considerably broadened. Minimally SSSA requires inputs from formal and informal seed sector specialists, farming system specialists, marketing professionals, and gender/ livelihood analysts. Nutritional expertise might be considered as an added bonus.

Specific recommendation: Multidisciplinary teams should be mobilized for seed system security assessments.

12.4 More generally, a political environment for 'real seed security assessment' has to be established. This is no easy task. *Technical advances in methods alone will not lead to more accurate assessments.*

Strong seed security frameworks at a national level and strong leadership, ensuring that seed security assessment is given focus (as distinct from food security and other non-food item assessment), can enable seed aid assistance in Zimbabwe to become more demand and problem driven. More accurate assessments will bolster the ability of seed- related assistance to address farmers' compelling seed security problems and to seize on important, emerging opportunities.

IX. REFERENCES

Almekinders, C. and N. Louwaars, 1999. *Farmers' seed production: new approaches and practices,* London: Intermediate Technology publications, Ltd.

Alwang, J., B. Mills, and N. Taruvinga. 2002. Why has poverty increased in Zimbabwe? Poverty Dyamics in Africa Series. Washington, D.C, The World Bank.

Anderson, I.P., Brinn, P.J., Moyo, M. and Nyamwanza, B. 1993. *Physical resource inventory of the communal lands of Zimbabwe-An overview*. NRI Bulletin No. 60. Natural Resources Institute, Chatham, UK. 186 pp.

Bourdillon, M., P. Hebinck, J. Hoddinott, B. Kinsey, J. Marondo, N. Mudege, and T. Owens. 2002. Assessing the impact of HYV maize in resettlement areas o9f Zimbabwe. Washington, D.C. International Food Policy Research Institute.

Bramel, P. and T. Remington, T. 2004 Relief seed assistance in Zimbabwe, In: L. Sperling, T. Remington, J.M. Haugen, J.M., and S. Nagoda (eds.), *Addressing Seed Security in Disaster Response: Linking Relief with Development* (Cali, Colombia: CIAT) , pp.159-179.

Catholic Relief Services (CRS). 2002 *Seed Vouchers and Fairs: a Manual for Seed-Based Agricultural Recovery in Africa.* Catholic Relief Services, developed in collaboration with International Crops Research Institute for the Semi-Arid Tropics and Overseas Development Institute. Nairobi, Kenya.

Community Technology Development Trust (CTDT) 2009. Food Security and Intervention Strategies in Zimbabwe. Paper submitted by Community Technology Development Trust to NANGO and presented at the Cabinet Summit: 27 March 2009. Harare: CTDT, manuscript.

DANAGRO , 1988. SADCC Reproduction and supply project, main report (vol 1A) and Country Reports (vol 2A-2J).

De Santis, M. 2009. Emergency agricultural production and food security support for summer 2009/10 using input vouchers. in " Proceedings for the meeting held on 29 May 2009 at 0900 at the Royal Harare Golf Club, Harare. Market Linkage Working Group.

Deutsche Presse Agentur (DPA), March 3, 2009 article entitled Zimbabwe Doctors say cholera could notch up 123,000 cases.

CIMMYT (International Maize and Wheat Improvement Center) 2008. Seed Sector Survey 2007/08. Project on Drought Maize Tolerance in Africa.

CSO, 2002a. Census 2002. Mashonaland East provincial profile. Central Statistical Office, Harare, Zimbabwe 137 pp.

CSO, 2002b. Census 2002. Mashonaland West provincial profile. Central Statistical Office, Harare, Zimbabwe. 143 pp.

CSO, 2002c. Census 2002. Matabeleland North provincial profile. Central Statistical Office, Harare, Zimbabwe, Central Statistical Office, Harare, Zimbabwe. 165 pp.

CSO, 2002d. Census 2002. Matabeleland South provincial profile. Central Statistical Office, Harare, Zimbabwe 152 pp.

Farm Community Trust of Zimbabwe, 2001. The impact of land reform on commercial farm workers' livelihoods. Unpublished report. Farm Community of Zimbabwe. 23pp.

FAO/WFP. Crop and Food Supply Assessment Mission to Zimbabwe, 5 June 2007. FAO

FAO/WFP Crop and Food Supply Assessment Mission to Zimbabwe, 5 June 2007. 22 June 2009. FAO Global Information and Early Warning System on Food and Agriculture; World Food Program. http://www.fao.org/docrep/011/ai483e/ai483e00.HTM.

Friis-Hansen, E. and D. Rohrbach. 1993. SADC/ICRISAT 1992 Drought Relief Emergency production of Sorghum and Pearl Millet Seed: Impact Assessment. ICRISAT Southern and Eastern Africa region, Working Paper 93/01. October 1993.

Hassan, M.R., M. Mekuria, and M. Mwangi. 2001. Maize breeding research in eastern and southern Africa: current status and impacts of past investments made by public and private sectors 1966–97. Mexico, D.F.: CIMMYT.

Heinrich, G.M. 2004. A foundation for the future: the Sorghum and Millet Improvement Program (SMIP) in Southern Africa. Proceedings of the SMIP final Review and Reporting Workshop, 25 – 26 November 2003. Bulawayo, Zimbabwe. The International Crops Research Institute for the Semi-Arid Tropics. Pg 126.

International Center for Research in the Semi-Arid Tropics, ICRISAT, (2007 Goat production and marketing: Baseline information for Semi arid Zimbabwe, Matopo Research Station Bulawayo , Zimbabwe.

Industrial Development Corporation IDC, 2008. The Fertilizer Industry in Zimbabwe: Where we are and where we want to go? IDC Industrial Research Series 3. Industrial Development Corporation, Harare, Zimbabwe. 57 pp.

Izumi, K 2006 The land and property rights of women and orphans in the context of HIV and AIDS: Case Studies from Zimbabwe. Cape Town, Human Sciences Research Council.

Louwaars, N. 1994. Seed supply systems in the tropics: international course on seed production and seed technology. Wageningen: The Netherlands: International Agriculture Centre.

Mazvimavi, K., D. Rohrbach, T. Pedzisa and T. Musitini, 2008. A review of seed fair operations and impacts in Zimbabwe. Global Theme on Agroecosystem Report no. 40. ICRISAT: Bulawayo, Zimbabwe

McGuire, S. 2001. Analyzing farmers' seed system: some conceptual components: in L. Sperling, ed., *Targeted Seed Aid and Seed-System Interventions: Strengthening Small farmer seed systems in East and Central Africa.* Proceedings of Workshop held in Kampala Uganda 21-24 (2000. Kampala: International Center for Tropical Agriculture, pp. 1-8.

Ministry of Agriculture, Mechanisation and Irrigation Development, Zimbabwe. 2009. Crop and Livestock Assessment report 28 April 2009. Second Round.

Muungani, D., P.S. Setimela and M. Dimairo, 2007. Analysis of mult-environment, mother-baby trial data using GGE biplots. African Crop Science Porceedings 8:93 (101-112).

van Oosterhout, S. 1996 What does *in situ* conservation mean in the life of a small scale farmer? examples from Zimbabwe's communal areas. in, L. Sperling and M. Loevinsohn (eds). *Using Diversity: Enhancing and Maintaining Genetic Resources on Farm*. New Delhi, India: International Development Research Centre, pp.35-52.

Ministry of Agriculture, Mechanization and Irrigation Development (MAMID) , 2009. Second Round Crop and Livestock Assessment Report. Ministry of Agriculture, Mechanization and Irrigation Development, Harare, Zimbabwe 35 pp.

Ministry of Public Service, Labor and Social Welfare, 2006. Zimbabwe-2003 Poverty Assessment Study Survey. Ministry of Public Service, Labor and Social Welfare, Harare, Zimbabwe.

Motsi T. , 2003. Brain drain strangling economic development. The Herald, July 14, 2003. http://www.globalpolicy.org/component/content/article/211/44384.html

Musinamwana, E. 2009. Use of vouchers in Agro-input distribution/ in " Proceedings for the meeting held on 29 May 2009 at 0900 at the Royal Harare Golf Club, Harare. Market Linkage Working Group.

Otysula, R., Rachier, G., Ambitsi, N. Juma, R., Ndiya, C., Buruchara, R., and Sperling, L. 2004. The use of informal seed producer groups for moving root-rot resistant varieties during periods of acute stress, in. L. Sperling, T. Remington, J.M. Haugen and S. Nagoda,(eds) *Addressing seed security in disaster response: linking relief with development.* Cali, Colombia: International Center for Tropical Agriculture, pp. 69-90.

Phiri, M.A.R., Chirwa, R. and Haugen, J.M. 2004. A review of seed security strategies in Malawi, in Sperling, L., T. Remington, J.M. Haugen, and S. Nagoda, S. (eds.) *Addressing Seed Security in Disaster Response: Linking Relief with Development.* Cali, Colombia: International Center for Tropical Agriculture, pp. 134-158.

Remington, T., Maroko, J., Walsh, S., Omanga, P. and Charles, E. 2002. Getting of the seed and tools treadmill with CRS seed vouchers and fairs. *Disasters* **26**(4): 302-315.

Rohrbach, D., R. Charters, and J. Nyagweta, J. 2004 Guidelines for Agricultural Relief Programs in Zimbabwe. Bulawayo: International Crops Research Institute for the Semi-Arid Tropics.

Rohrbach , D., A.B. Mashingaidze, and M. Mudhara, M. 2005. The distribution of relief seed and fertilizer in Zimbabwe, lessons derived from the 2003/04 season, Bulawayo, Zimbabwe: The International Centre for Research in the Semi-Arid Tropics.

Rohrbach, D., K. Mazvimavi, T. Pedzisa, and T. Musitini, 2006. A review of seed fair operations and impacts in Zimbabwe. Bulawayo, Zimbabwe: The International Centre for Research in the Semi-Arid Tropics.

Roth, M. and Gonese, F. 2003. Delivering land and livelihoods: Post-Independence land reform and resettlement in Zimbabwe. Harare, Zimbabwe, 394 pp.

Rukuni, M., Tawonezvi, P., Eicher, C., Munyuki-Hungwe, M. and Matondi, P. (Eds.), 2004. Zimbabwe's agricultural revolution revisited. University of Zimbabwe Publications, Harare, Zimbabwe 728 pp.

Scientific and Industrial Research and Development Centre 2008. An analysis of the cause and effect of the brain drain in Zimbabwe.
last updated 2008-12-17. http://www.sarpn.org.za/documents/d0000422/index.php.

Sperling, L. ed. 2001. *Targeting seed aid and seed system interventions: Strengthening small farmer seed systems in East and Central Africa*. Proceedings of a Workshop, Kampala, Uganda, 21–24 June 2000. Kampala, Uganda: International Center for Tropical Agriculture, Kampala.

Sperling, L. 2002. Emergency seed aid in Kenya. some case study insights from lessons learned during the 1990s. *Disasters* **26**, 4, pp..283-287.

Sperling, L., T. Osborn, H.D. and Cooper, 2004. *Towards effective and sustainable seed relief activities,* Report on the Workshop on Effective and Sustainable Seed Relief Activities, 26-28 May 2003, FAO Plant Production and Protection Paper 181, Rome: FAO.

Sperling, L .and Remington, T. with Haugen, J.M. 2006. ' Using seed aid to give farmers access to seed of new varieties. Practice Brief No. 5.' in: Seed aid for seed security: advice for practitioners. Practice Briefs 1-10. Rome, Italy, International Center for Tropical Agriculture and Catholic Relief Services.

Sperling, L., Cooper, H. D., Remington, T., 2008. Moving towards more effective seed aid. *Journal of Development Studies* 44 (4), 586-612.

Sperling, L. 2008. When Disaster Strikes: a guide to assessing seed system security. Cali: International Center for Tropical Agriculture.

Takavarasha, T., D. Rohrbach and D.Mfote 2005. Assessment of Challenges and Opportunities for Improving Seed Supply under Relief and Recovery Programs: report of Stakeholder's Consultancy. Harare.

Tripp R, and Rohrbach D. 2001. Policies for African seed enterprise development, *Food Policy* **26**(2):147-161.

Vincent, V. and Thomas, R.G. 1960. *An agricultural survey of Southern Rhodesia: Part I: agro-ecological survey*. Government Printer, Salisbury.

Walsh, S., Bihizi, J.M., Droeven, C., Ngendahayo, B., Ndaoroheye, B., and Sperling, L. (2004) Drought, civil strife and seed vouchers and fairs: the role of the trader in the local seed system. In, Sperling, L., Remington, T., Haugen, J.M., and Nagoda, S., (eds.) *Addressing Seed Security in Disaster Response: Linking Relief with Development.* Cali, Colombia: International Center for Tropical Agriculture, pp. 45-68.

World Bank 2006. Agricultural growth and land reform in Zimbabwe: assessment and recovery options. April 28, 2006. Environment, Rural and Social Development Unit-Southern Africa (AFSTI). Country Department 3 Africa Region.

United National World Health Organization (WHO) 2009. Cholera in Zimbabwe: Epidemiological Bulletin Number 10.

X. ANNEXES

- Agro-dealers visited
- Persons consulted
- Participants at SSSA feedback meeting, July 23, 2009

SSSA Zimbabwe: VISITS TO AGRO-DEALERS (N=35) and OPEN MARKETS (sites= 5)

Murehwa A1 Seeds Seed Co **Bulaweyo** Bulaweyo Seed Centre C. Gauche Farm and City Center Fort Well Jaggers MICA Hardware ORAP (ACRONYM?....) National Tested Seeds (NTS) Red Star **Masvingo** Advance Farm and City Center Masvingo Farm Supplies N. Richards Hardware Red Star **Bikita** Orellana trading Farmer and Builder Merchants (+8 small, non-specialty stores—shoes, food etc) **Beitbridge** Bambazonke Wholesalers N& R Wholesale Tagira Supermarket Red Star	**Gweru** Meikles **Kwekwe** Farmers Paradise **Kadoma** Farm and City **Chegutu** Farm and City Center **OPEN MARKETS** Harare- Mbare Murehwa Bulaweyo Beitbridge Masvingo

Key persons contacted during seed system security assessment

Name	Organization
HARARE	
Karel Selenka	Catholic Relief Services
Danisile Hikwa	MoA –Division of Crops Research
John MacRobert	CIMMYT
Peter Setimela	CIMMYT
Walter Sanchez	CARE
Garikai Magaya	CARE
Paul Mapfumo	SOFECSA
Chrispen Suvume	Univ. of Zimbabwe
Andrew Mugobo	World Vision Zimbabwe
Rhodes Ndlovu	World Vision Zimbabwe
Farmer Mulagis	World Vision Zimbabwe
Pauline Alexandretta Hobane	Consultant
Michael Jenrich	FAO Emergency Unit
Jacopo D'Amelio	FAO
Kudzayi Karin	FAO
Douglas Magunda	FAO
Ethel Sibanda	FAO
Wellington Mudzamiri	FAO
Felix Dzvurumi	FAO
Jan Wessel	USAID/OFDA
Mark Adams	USAID/OFDA
Scott McNiven	USAID
M. Jonga	Seed Co
Walter Chigodora	Agri Seeds and Services
Rob Kelly	Agri Seeds and Services
MUREHWA	
Mr. Matiburo	District Administration
Douglas Makuvire	Ministry of Agriculture
T. Chigarira	CRS- Murehwa
Mr. Zanza	Grain Marketing Board
Mr. Fumhanda	Grain Marketing Board
Cornelius Chirape	Pioneer Seed Co.
Amon	COMMUTECH
TSOLOTSHO	
Davison Masendeke	AGRITEX
Geoff Heinrich	CRS
Willie Makumbe	CRS
Mandlenkosi Mhlanga	Red Star Agro-dealer
Levi Tshuma	Fortwell Wholesalers, Limited Agro-dealer

Henry Makozhora	Jaggers
Martha Andersen	Bulaweyo Seed Center
Noble Tamanikwa	Pannar Seed Company
Mduduzi Sibanda	COMMUTECH
BEITBRIDGE	
R.Matanda	Bambazonke Enterprises
Taruona Pembere	Red Star
Sam Goto	Tagira Supermarket
Darlington Chakanya	N+R Wholesale
MASVINGO/BIKITA	
Earnest Musinamwana	CARE
Saison Ncube	CARE
Exile Mhango	N. Richards Hardware
Fameeda Paulser	Denbury Trading t/a Masvingo Farm Supplies
Shadreck Mahove	Nyika Growth Point
Mrs Anna Zvoushe	Zvoushe Store, Bikita

Seed Systems Security Report Back Meeting: 23 July 2009 Bronte Hotel, Harare Zimbabwe

	Name	Organization	Position
1	Mari Morimoto	International Federation of the Red Cross	Monitoring
2	Stanley Ndlovu	International Federation of the Red Cross	Relief delegate
3	Misheck Charasika	World Vision	Relief Team Leader
4	Petros M	DAPP	Project Manager
5	Brighton Mvumi	Management Technical Learning and Coordination Unit	Agriculture & Food Security Coordinator
6	Takella Shoko	AGRITEX - NEWU	National Coordinator
7	Tamuka J Mukura	Ministry of Agric	Economist
8	GM Heinrich	Catholic Relief Services	Senior Tech Advisor – Agric & Environ
9	J d'Amelio	FAO	Coordinator – Information Office
10	G W Chidawanyika	World Bank	
11	Tambu Pasipangodya	AGRITEX - NEWU	Agronomist
12	Rupangwana Chrispen	AGRITEX	Coordinator Planner
13	Regina Gapa	ECHO	Program Officer
14	Allan Majuru	ICRISAT	Scientific Officer
15	Locadia Marongwe	Seed Co	Account Relations Manager
16	Marshal Mukuvare	Zim Red Cross	Program Officer
17	Tafadzwa Makata	Zim Red Cross	Food Security Officer
18	Kudzai Akino	WFP	Programme Officer
19	John MacRobert	CIMMYT	Seed Systems
20	Ben C Mbaura	Practical Action	Districts Facilitator
21	Veronica Mutiro	IFAD	Consultant
22	Obert Randi	ARC	Seed Technologist
23	Dowsen Sango	TDH/Italia	M&E Officer
24	Edson Mugore	AusAid	Program Advisor
25	Memory Muchenga	Environment Africa	Field Officer
26	Farai Ncube	Environment Africa	Monitoring and Evaluation
27	Themos Ntasis	IRD	Country Director
28	Jan Robertson	Agri - Biotech	CEO
29	Thomas Rogers	USAID/OFDA	Program Officer
30	Jan Wessel	USAID/OFDA	Regional Advisor
31	Lovemore Musa Lewis	Oxfam GB	Economic Justice Coordinator
32	Walter Sanchez	CARE	ANR Sector Coordinator
33	Erica Keogh	MTLC	M&E
34	Mac De Santis	SDC	Coordinator

35	Klaus Leushener	GTZ	Consultant
36	Mugove Chakurira	CAFOD	Program Manager
37	Pierre Luc Vanhaevirbeke	EC	
38	Glenn Campbell	Charter Seeds	Director
39	Tichaona Mashado	CAFOD	Program Support Officer – Agric
40	Wilfred Munguri	CRS	Sector Coordinator
41	Amos Chinyama	CRS	M&E Officer
42	Patience Nyakanda	APLUS	
43	Sue Kageler	UNICEF	Consultant M&E
44	Katrina Wallace Karenga	Development Consultant	
45	Rod Charters	GRM	MTLC Manager
46	Davison Masendeke	AGRITEX	Provincial Agronomist
47	David Chikodzore	Consultant	
48	Bart Mupeta	Plan International	Food Security & Poverty Advisor
49	Enid Katungi	CIAT	Agric Economist
50	Rhodes Ndlovu	World Vision	Food Security Officer
51	Douglas Magunda	FAO	M&E Officer
52	Pauline Hobane	Consultant	
53	Zulu Dube	River of Life	Procurement
54	Urayayi Mutsindikwa	CRS	Agric & Food Security Advisor
55	Annely Koudstaar	Netherlands Embassy	Program Officer
56	Elizabeth Ngadze	UZ Crop Science	Lecturer
57	Doreen Chimwara	IOM	AP
58	Martin Mubvindi	CSO	PS Officer
59	Louise Sperling	CIAT	Scientist
60	Dennis Zaranyka	Seed Co	Managing Director
61	Walter Chigodora	Agriseeds	Managing Director